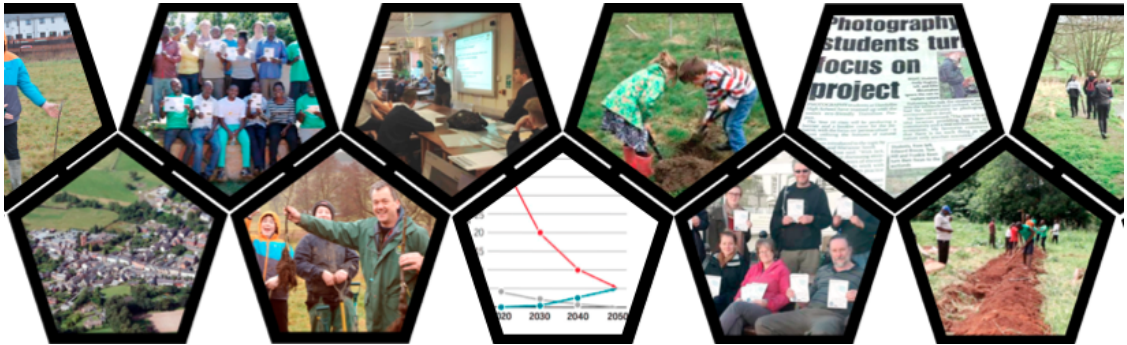


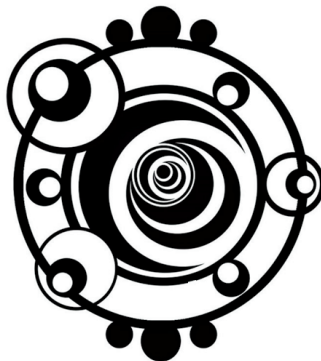
One School One Planet

Vol. 1

Climate. Education. Innovation.



Steven Jones & Jack Hunter, PhD



Psychoid Books

Endorsements

“Many people are worried about climate change, concerned that there is no serious leadership from government, instead a dangerous silence. They are also looking for real, practical solutions, rather than smoke and mirrors theories about reducing global warming with Big Technology. There are many tried and tested solutions that can be found all over the world in different climates and nations but where do we start at home? It is exciting to discover a Welsh community that has already done so much to pioneer these practical solutions using permaculture design and the power of the Transition Movement: influencing school curriculum, creating local community orchards and gardens, establishing a housing co-op and associated enterprises, storytelling, offering cutting edge training to spread this knowledge far and wide, and grounding all of this with an understanding of our deep interconnection with all species as humans alive at this critical time in our history. Reaching out, the *One School One Planet* project has gathered stories about their approach and shared them in this book. Prepare to be inspired.”

- **Maddy Harland**, editor of *Permaculture Magazine* and co-founder of Permanent Publications, www.permaculture.co.uk

“The *One School One Planet* project (which embodies both pragmatic daily wisdom, and myth inspired storytelling), is a vitally important means to invite our participation in the task of eliminating the variety of eco-crises threatening all life on planet Earth. I encourage all of us to support this project and read this book.”

- **Mark A. Schroll, PhD**, author of *Transpersonal Ecosophy*, Vol. 1.

One School One Planet

Vol. 1

Contributing authors retain full ownership
and all rights to their individual essays.

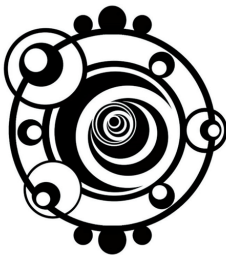
ISBN: 978-0-244-97199-1

All rights reserved. No part of this book may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying, recording or by any information storage and retrieval system, without written permission from the author(s) except for the inclusion of brief quotations in a review.

Published by Psychoid Books, Llanrhaeadr-ym-Mochnant

In association with Sector39, Llanrhaeadr-ym-Mochnant.

Spaceship Earth logo created by Ellie Owen.



Psychoid Books



www.psychoidbooks.co.uk
www.llanfyllin.sector39.co.uk

Chapter	Contents	pp.
0	Foreword	7
1	Aims of the Project	9
2	Saving the Planet, One School at a Time	11
3	Climate Change and the Countryside: How do we Respond?	15
4	Science in the Dark Ages	23
5	What is Permaculture?	25
6	Revisiting Permaculture Ethics	29
7	What is Systems Thinking?	35
8	What is Transition?	39
9	Shallow and Deep Ecology	43
10	Developing a Permaculture Curriculum for Schools	47
11	PSE and Transition	51
12	Creative Arts and Transition	55
13	Working with Photography Students	59
14	Re-animating the Landscape: Three Legends of Llanrhaeadr-ym-Mochnant	61
15	Animism and the Personhood of Ecosystems	71
16	Going Green	77

17	Dragons Co-op: Housing Co-Operative and Gift Shop	83
18	Cae Bodfach Community Orchard	87
19	Vox Pop Project Transcripts	89
20	Teaching Permaculture Principles in the Classroom	93
21	Reflecting on Classroom Experiences So Far	117
22	How Far Can You See?	123
	Useful Resources	129
	Biographies	131

Foreword

Facing up to the challenges of our changing climate goes much deeper than erecting a few wind turbines and switching to a Honda *Prius* - it challenges the very heart of our social, cultural and economic models. The transition before us will require active involvement from everybody. Some people believe our environmental woes are due to the sheer weight of population, but the truth is much more complex. A very small percentage of the global family are responsible for the vast majority of emissions, and we are faced with the reality that it is just not possible for India, China, Brazil and Mexico to follow the same economic path as the West did without tipping the balance into a catastrophe.

What if we can find new ways of working that are actively beneficial - methods of building, farming and living that lock carbon away in plants and soils - while also meeting the needs of the 7 billion of us? If each person can have a net beneficial impact on planet and climate then maybe, at this moment when we are facing our greatest challenge, the many hands available to us will become a big part of the solution.

The *One School One Planet* project has been working to bring some of these ideas into the mainstream school curriculum, and this small book is a record of our efforts at achieving this. Kids at school today are growing up into a different world than the one we grew up in, and they will need to be equipped with new concepts and ideas to meet its challenges. I call it *permaculture*, it goes way beyond agro-ecology and green technology - it fashions a totally new mindset, and provides design tools that facilitate this great change.

We are saving the planet one school at a time! We are working with schools in Powys and Uganda – children of farmers and rural

One School One Planet

communities where we hope to start a revolution. That is an emotive word. Let's call it *transition*, *evolution* maybe - one that embraces our planet's ecology and understands that society and economy are a subset of a healthy living biosphere.

Everything falters and fails when the rains stop.

Steven Jones

As Steve quite rightly points out, the challenge of tackling anthropogenic climate change is going to require a total transformation of our social, cultural and economic systems. We all need to think differently about the world and our position within it. Education will have to play a major role in initiating this cultural transformation. The *One School One Planet* project is just one approach to bringing about this necessary shift in consciousness by introducing the emerging generation to permaculture principles and encouraging a re-evaluation of our role in the global ecosystem. This book chronicles the first year of the *One School One Planet* project, from our initial theoretical and planning work, through to classroom teaching sessions at Llanfyllin High School. We have documented all of this in the hope that it might enable others to replicate our project with different schools and communities across the world. Many of the chapters included here were written as public outreach articles for various blogs, local newspapers and newsletters. It is intended to be inspirational and encouraging of innovation. It does not contain all of the answers, but may point the way towards a more ecologically in-tune way of living in the world. There is much to ignite creative thinking here, from principles of economy, ecology and agriculture, to myth, folklore and narrative. We hope you find inspiration in these pages, and that you will follow our journey through similar future volumes.

Jack Hunter, PhD

1.

Aims of the Project

We have been successful in our bid for funding to support Llanfyllin High School and community in a three year project to place Powys on the map as the frontline for innovation in the face of our rapidly changing climate. This exciting work commenced in September 2016, and aims to find and work with the leaders of the future. Our goal is to build an inclusive vision for our community - one that recognises and understands our responsibilities as global citizens, and one that creates exciting new opportunities for work, play and learning.

Employing the principles of permaculture design (more on this later), we hope to put together a transition timeline that will lead us to a carbon negative Llanfyllin by 2046. This vision and plan should be shaped by the whole community, and for the wider benefit of all. The world is changing and as a community we must shape an informed vision of what we want for our collective future!

The following are a few of the key goals our project aims to achieve. The chapters that follow will present some of the ways in which we have been able to address or achieve these goals. We set out to:

- Facilitate a full permaculture design process for Llanfyllin high school, working with a group of students from across the age spectrum.

One School One Planet

- Undertake a community audit of resources and opportunities as well as priorities and objectives.
- Facilitate a community narrative and process for sustainability transition; work, housing, food, transport, investment, community currency, social support, waste reduction and energy efficiency.
- Develop a social media platform to engage with the community and disseminate the outputs.
- Produce a practitioner's manual drawing from the course experience as a template for change. By creating a set of teaching resources, training and guidelines for use by other groups interested in following the same process.
- Recording the project methodology throughout the project. The resulting permaculture design plan will present a template which can both evolve and exist as a model that other communities might learn from.

2.

Saving the Planet, One School at a Time

Steven Jones

This is big, really big. The 195 countries who signed the Paris Climate Agreement in December 2015 have now ratified the treaty. Trump or Clinton, Brexit: hard or soft, Syria and a potential world war three, we might be forgiven for being a little distracted as I write this in 2016, but this is the big story.

The world's governments have agreed that we need to listen to the scientists - we really do have to stay under two degrees of global temperature change, but there is no policy in place that gets us to where we need to be. The agreement they signed has no binding targets or penalties. It is basically a statement of intent that has no teeth.

How fast can we get off coal, gas and oil? We have about thirty years to move completely away from our old ways, and that allows no wiggle room whatsoever. Sooner would be better!

So where will this momentous change come from? Even though they happily signed the agreement, many governments - including our own - are not formulating policy that will get us to where we need to be, they are still building roads, talking about fracking, planning new runways and hoping to restart economic growth in the consumer economy.

No, this change will have to come from the bottom up. The emerging generation will be leading the way. It is much easier to see past the oil age when you are not personally invested in it! Just as

One School One Planet

we found in Uganda when we were teaching there in May 2016, the idea of localised organic food systems, distributed solar power networks and public transport doesn't alarm them, since they have that already and it works fine. Whereas we have constructed a commuter economy that is dependent on coal and oil, leading to disconnected nuclear families and rampant consumerism (as if that was an end in itself). All this assumed that the oil would never run out, and that burning it had no consequences. In spite of what we know, we are still desperately trying to keep growth going because our economic models require it of us. It is going to be a big ask for the UK to make the changes required by the Paris Climate Agreement.

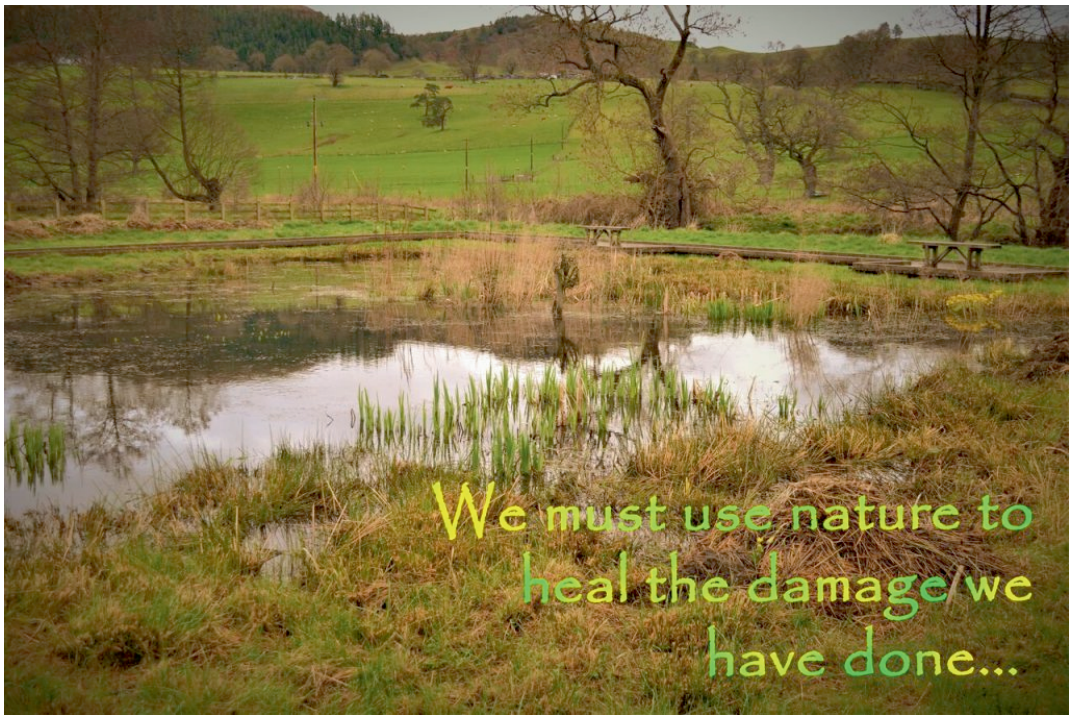
The train that is the neo-liberal market-based consumer economy has left the station never to return. For the emerging generation that simply isn't going to be their future. They missed that opportunity so they are going to have to invent a new one for themselves. We might not know much about the future, but I am guessing it is going to be low carbon and almost exclusively local. This is not bad news, especially not to the ears of someone who will never have a pension plan paid by North Sea Oil. The post carbon economy is a land of opportunity, like the Wild West seemed to those intrepid settlers two hundred odd years ago, or when they first invented the internet - it is a vast un-occupied space waiting for a new generation to inhabit it. With this bold project we are looking for the leaders who are going to help create a new vision for a post-carbon society.

One School One Planet is open to all. Centred on Llanfyllin High School in Powys, we will be linking to schools across the UK and Africa, creating blogs, podcasts, newspapers, and holding public talks, film screenings and debates. From these activities we hope to be able to help initiate new projects and micro-enterprises, and maybe even a community currency.

One School One Planet

This is about working together, no one is telling anyone else what to do, but what is clear is that we must build a common vision and action plan that fully takes into account what the climate science is telling us. Economy cannot exist outside of ecology, we have tried that and it has been a disaster of pollution, deforestation and species loss. Together we can build an economy that restores the ecology of the planet and creates hope for a future that we all want to be part of.

Join in, be a leader for change.



'We must use nature to heal the damage we have done...'
Photograph by Year 10 Photography Student at Llanfyllin High School.

3.

Climate Change and the Countryside: How do we Respond?

Steven Jones

Climate change is a problem that will not go away, we must all rise to meet the challenge. Farmers, small holders and landowners will be at the forefront of the new carbon economy. Burning fossil fuels, felling forests and ploughing soils has pumped vast quantities of carbon dioxide into the atmosphere. What we are facing is a 'carbon in the wrong place' problem: the carbon in the air needs to go back into the soils where it belongs. Achieving this will revitalise our countryside like never before.

Describing climate change as a 'huge problem' conjures up the wrong image in people's minds, because huge problems seemingly require huge solutions. I recently read an article that encourages us to visualise this problem not as a juggernaut, dwarfing us in scale, but rather as a murmuration of starlings - something substantial enough to darken the skies, but made of many individual parts, small and insignificant, but collectively very powerful. The response to climate change, therefore, calls for millions of *small* responses which in combination will affect the changes required of us by the scientific reality of the current situation.

If you are still uncertain about climate science and the extent of the challenge we face, then look no further than the Paris Climate Agreement, signed and ratified by 195 countries, which spells it out in no uncertain terms:

One School One Planet

The Paris Climate Agreement: Key Elements

The Paris Agreement is a bridge between today's policies and climate-neutrality before the end of the century.

Mitigation: Reducing Emissions

Governments agreed:

- a long-term goal of keeping the increase in global average temperature to well below 2°C above pre-industrial levels;
- to aim to limit the increase to 1.5°C, since this would significantly reduce risks and the impacts of climate change;
- on the need for global emissions to peak as soon as possible, recognising that this will take longer for developing countries;
- to undertake rapid reductions thereafter in accordance with the best available science.

Transparency and Global Stocktake

Governments agreed to:

- come together every 5 years to set more ambitious targets as required by science;
- report to each other and the public on how well they are doing to implement their targets;
- track progress towards the long-term goal through a robust transparency and accountability system.

One School One Planet

Adaptation

Governments agreed to:

- strengthen societies' ability to deal with the impacts of climate change;
- provide continued and enhanced international support for adaptation to developing countries.

Loss and Damage

The agreement also

- recognises the importance of averting, minimising and addressing loss and damage associated with the adverse effects of climate change;
- acknowledges the need to cooperate and enhance the understanding, action and support in different areas such as early warning systems, emergency preparedness and risk insurance.

Role of Cities, Regions and Local Authorities

The agreement recognises the role of non-Party stakeholders in addressing climate change, including cities, other subnational authorities, civil society, the private sector and others. They are invited to:

- scale up their efforts and support actions to reduce emissions;

One School One Planet

- build resilience and decrease vulnerability to the adverse effects of climate change;
- uphold and promote regional and international cooperation.

Source: http://ec.europa.eu/clima/policies/international/negotiations/paris_en

The debate really *is* over (Trump rhetoric aside). All that is left to discuss is how bad and how urgent the consequences are, and to realise how hard we will have to work to stay under the agreed two degree target. Allowing ourselves to go beyond it really is not an option.

I do want to offer some positives though. With change comes opportunity. Responding to the climate challenge is a chance to redefine our economy. To avoid catastrophe we have to fundamentally alter the way we think and act. The future is all about carbon sequestration. With atmospheric CO₂ at 400ppm for the first time in about two million years we must realise we cannot survive at this level. We have to bring it back down to 350ppm to have a chance of stopping the planet overheating, and, if we take the advice of NASA scientist James Hansen, we must do this by the end of the century.

How can we possibly manage this when emissions are still rocketing? We have to do more than put the brakes on, we have to actively reverse the trend!

The oil industry is doomed: shale oil and tar sands, as well deep sea reserves, are nowhere near as plentiful as the reserves we built the global economy on in the nineteenth and twentieth centuries. The net energy return of these marginal reserves is a fraction of what Saudi and Texan oil once was. High prices and short supply cripple the economy. Meanwhile, investment in solar and wind energy, and other renewables, is accelerating at unprecedented

One School One Planet

speeds. Good news, but these only yield electricity – responsible for about 30% of our emissions. Food production and transport are also addicted to oil - jet fuel, petrochemicals, diesel. Even if we cover every surface in solar panels we cannot replace oil with electricity. The fleet, the roads, the pumps, the chemicals are all derived from and powered by the black stuff.

So here's my prediction. A low carbon economy will drive us to re-localise much of our economic activities. Food production for example, especially fruit and vegetables, chickens and eggs, fish and fungi, will all come back home. We will have to re-invent our food economy to run largely outside of the monetary system, at least that which we can produce locally and organically. Another key change is that we will all travel a lot less, and in different ways. We will still move around, but the forty mile daily commute is over. Transport is more likely to be *big* and *slow* in our low carbon future: think sailing, airships, trains and busses, horses and carts even. All that sounds a little retrograde, but innovation really is a big part of the solution! We are going to have to change the way we think.

Here are some energy ideas that most people are not thinking about yet. Did you know that if you compost wood-chip you get more energy in the form of heat than if you were to efficiently burn it? Heat is great, but the resulting compost is also a high carbon soil booster that lasts decades, unlike the soluble nitrates that we currently use in agriculture. Half of domestic energy consumption is in the form of heat. We are obsessed with electricity when in many cases there are other options.

Actually, we shouldn't be burning wood at all - we should be *pyrolysing* it to produce heat *and* charcoal. We call this by-product of pyrolysis 'biochar.' When produced at 550°C all volatile and potentially toxic tars and oils are driven off and combusted, or can be stored and compressed for later use. Some carbon is emitted of course, but the resulting gasses are clean, and smoke and

One School One Planet

particulate free. It is clean combustion, and the resulting residue is carbon in a pure and stable form. This is one simple way in which we can begin to sequester carbon back to soils where it belongs, by using plants to trap it, almost any type of plant (they are all made of carbon).

We can make biochar and wood gas from straw, rice hulls, hedge trimmings, whatever, and agriculture is full of these residues which are usually burnt or left to biodegrade for lack of alternatives. We need to be imaginative! People are discovering that biochar, crushed to powder, is an excellent soil additive, as it creates habitat for soil microbes and biota, much like a coral reef does for fish. Productivity can be boosted many times over, and water filtration and retention is also greatly enhanced. Fed to animals it improves digestion, reducing methane emissions considerably. Cows, pigs, fish and shrimp all gain weight by improved energy conversion of their feeds. To work as a soil conditioner it can be inoculated with nutrients and microbes, so when fed to animals it lands on the field or barn floor ready to be used as a soil enhancer.

Look, there is no magic bullet. I am not saying this one technology will solve our ills, but it points us in a whole new economic direction. You can build a house from straw bales and coppice poles, insulate with sheep's wool and paper pulp fluffed up like cotton. All these are renewable, carbon rich materials. The main activities of the economy must be drivers of carbon sequestration, while also contributing to productivity. Think of the impact on the countryside if the main fuel was sticks, rather than whole trees.

Regrowing the forests and re-wilding the landscapes in uplands and non-farming areas would allow nature to draw down gigatonnes of carbon while also rebuilding wildlife habitats and water catchments. We are experiencing flooding because of intensified weather, but also because the mountains are bare and the soils

One School One Planet

compacted and low in carbon. Indeed, many of our modern problems stem from our destructive relationship with the biosphere. The landscape is our partner, our home, it purifies water and generates the clean air we breathe. The war on 'pests,' 'weeds,' woodlands and scrub has to stop. We can channel these natural resources to meet our needs, as well as nature's.

We call this change in thinking 'permaculture.' It is more than agro-ecology, agro-forestry, or 'going green,' because it embraces the human and economic decisions that drive us all. Permaculture design is ecology, economics and personal action all rolled into one. Essentially it offers a new operating system for humanity, one that works because it obeys the laws of nature. It is

I am writing this in the Sector39 office in Llanrhaedr-ym-Mochnant, a permaculture teaching practice of 11 years, built on 25 years of hands-on experience. We have recently won a three year bid to bring permaculture to our community. We are doing it by challenging the local High School of 1000 students to come up with a design pathway to a community owned vision for 2045, by which time we should be carbon negative. We need to embrace this future and shape it for our own needs, rather than have it imposed on us by desperate circumstances or authoritarian governments.

Our project is called 'saving the planet one school at a time.' Our aim is to create a model that everyone can follow. Governments and businesses alone really cannot fix this, it is up to us, and especially the emerging generation. This problem will not go away until we have beaten it. It defines young people's lives for at least the rest of this century. We have to reach out to every one of those billion starlings and steer each one on a new course. It is not a juggernaut, it is our chance to embrace and shape a whole new way of being.

We walk the path to our
own destruction



‘We walk the path to our own destruction.’
Photograph by Year 10 Photography Student at Llanfyllin High School.

4.

Science in the Dark Ages

Steven Jones

Rachel Carson, author of the groundbreaking *Silent Spring*, warned us many years ago of the dangers of allowing politics to influence our understanding of the natural world:

“The real wealth of the Nation lies in the resources of the earth — soil, water, forests, minerals, and wildlife. To utilize them for present needs while insuring their preservation for future generations requires a delicately balanced and continuing program, based on the most extensive research. Their administration is not properly, and cannot be, a matter of politics”

Rachel Carson, *The Silent Spring*.

This begs the question of what exactly the role of science is when the politicians of the day can cast aside the dire and detailed warnings of the climate science community, despite the agreements and commitments they so publicly made to respond to this unfolding crisis?

We teach science in our schools yet we fail to adhere to it in our daily lives. What message does this send to the emerging generation? The smoking ban, compulsory seatbelts in cars, these were considered responses to known and measurable threats, so

One School One Planet

why then do we ignore the much more serious warnings about climate and energy?

We know of the disproportionate hold that the oil industry has over our economy, over the US presidency and the Russian rouble, yet to allow that reality to frame our responses to climate change will have dire consequences for all.

In 2016 we launched the *One School One Planet* project with the specific aim of exploring these issues across the whole community, and asking ourselves the question of how we can better prepare for what awaits us. To begin, surely we are obliged to refer ourselves back to the science - what can we expect, what is happening, how much do we know? Also, we need to look at this information outside of the political and economic framework that surrounds the debate in the mainstream media.

We feel that permaculture approaches offer a practical route towards the future we all need to see in.

5.

What is Permaculture?

Steven Jones

In essence permaculture is a design system for sustainability.

Permaculture uses observations of nature as models for how we might approach design in a form that embodies nature's resource efficient, cyclical, dynamic and interconnected systems.

Permaculture design steers us away from the often simplistic, linear and wasteful models that frequently typify human endeavours.

Permaculture views climate change, habitat destruction, top soil loss and the increasing commodification of both the human and natural world as more than externalities of an otherwise healthy economy, but as inherent and potentially fatal flaws.

Our society's ability to externalise the environment and see ourselves as separate from it has allowed us to view nature as mere resources, rather than a living interconnected life-support system that we are part of.

Permaculture addresses this reality by presenting an holistic design system that allows us to build strategies that meet our individual resource needs in ways that are not at the expense of wider society, or the biosphere as a whole.

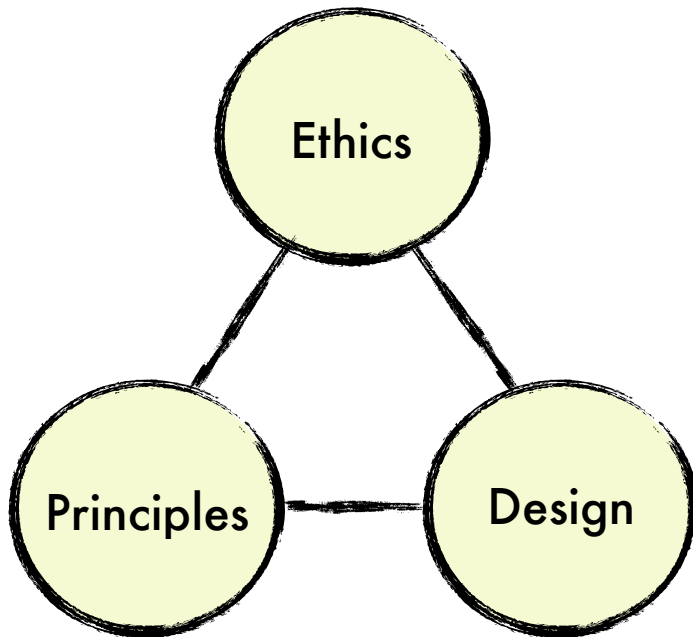
Nature runs on dynamic relationships, it is never static. It is constantly changing, but it does so within observable patterns and cycles. The definition of permaculture reflects this, as every

One School One Planet

situation and individual is unique and every circumstance demands a unique approach within this wider framework of understanding.

Permaculture is framed by ethics, those of setting limits to personal consumption and reinvesting surpluses into society and the environment. Unfettered consumerism may be good for GDP, but it is not an end in itself and comes at a cost. This framework recognises that, as individuals, we do not exist outside of society, and that society and economy are in turn a subset of a healthy environment.

Permaculture's principles and design tools equip us to achieve these longer term goals as expressed in its core ethics, also derived from observations of nature. Both principles and ethics empower and steer the designer to achieve more harmonious, sustainable and abundant outcomes.



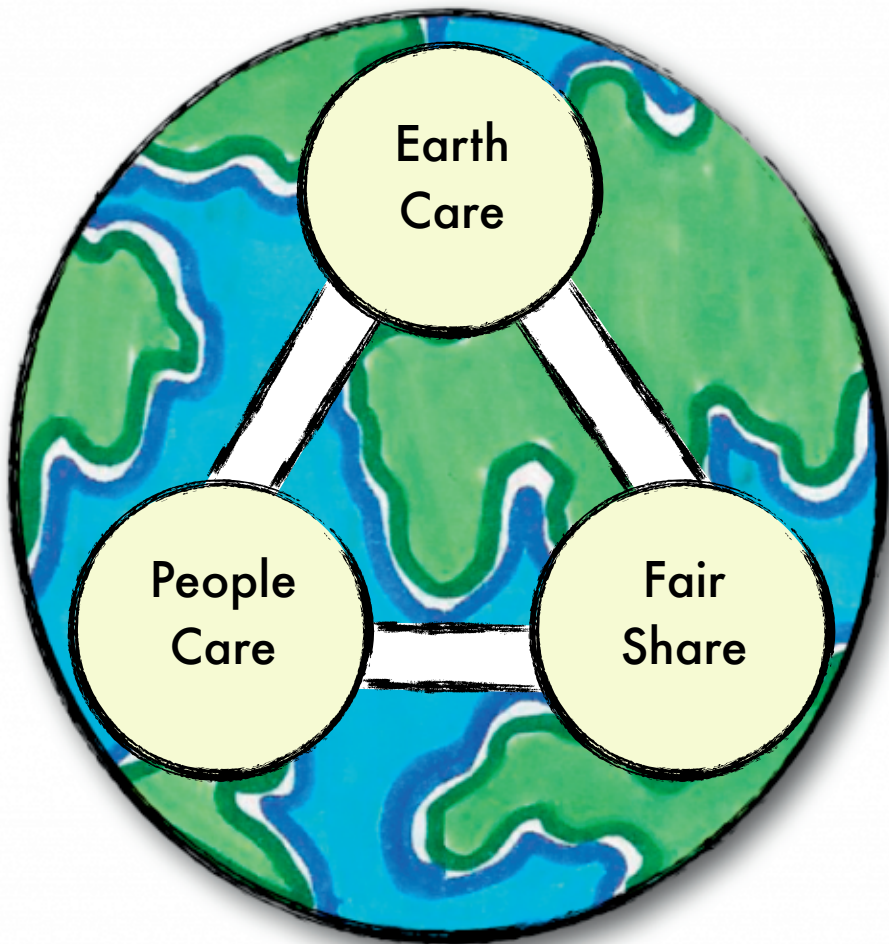
One School One Planet
David Holmgren's
Ethics and Principles of Permaculture

Ethics

- Care for the earth.
- Care for people.
- Fair share.

Twelve Principles

1. Observe and interact.
2. Catch and store energy.
3. Obtain a yield.
4. Apply self-regulation and accept feedback.
5. Use and value renewable resources and services.
6. Produce no waste.
7. Design from patterns to details.
8. Integrate rather than segregate.
9. Use small and slow solutions.
10. Use and value diversity.
11. Use edges and value the marginal.
12. Creatively use and respond to change.



David Holmgren's Permaculture Ethics.
Earth image created by Year 10 Welsh Baccalaureate Student, Llanfyllin High School.

6.

Revisiting Permaculture Ethics

Steven Jones

Permaculture ethics, that's easy right? Earth-care, People-care Fair share. Everyone knows the mantra, but do we remember what these things actually mean when we recite them parrot fashion?

Recently I have seen on-line chat suggesting that the permaculture ethics should be updated, improved if you will. The suggestion is *Future-care* as an alternative to *Fair-share* – which was always a bit lacking, and the least understood of the three. But no, Future-care really doesn't do it for me, and I feel its inclusion would greatly impoverish the ethics model.

Let us re-trace our footsteps a bit here and roll things back to 1992 and the Rio Earth summit when the 'S' word entered the lexicon in a much bigger way than it had ever been used before. *Sustainability*, they told us is the ability to meet the needs of the present without compromising the ability of future generations to meet their needs.

Ok, so far so good. Then, Toby Hemenway, in his lecture 'How permaculture can save the world but not civilisation,' pointed out that the definition of sustainability is lacking in that it fails to define what a 'need' actually is, and come to that, why are we putting meeting the needs of the present before that of the future? What is a need? Do you really need that cappuccino or another pair of shoes, when it comes to it, who gets to define what a need is? One man's need is another man's indulgence.

One School One Planet

If we are not careful we will end up back in the finger wagging judgmental territory most criticised of environmentalists, who seem to want to tell everyone else what to do while at the same time alienating the vast majority of the population. Telling people they can't have the stuff they feel they need or deserve, or holding one's own virtuous lifestyle up as some master template has yet to win over the masses.

The 'S' word is fraught with difficulties, and within a few short years of Rio we have governmental ministers talking about the 'sustainable growth of the car industry,' or 'sustainable economic growth,' or various other oxymorons. The word rapidly lost its meaning, being hi-jacked left, right and centre to represent a vast swathe of viewpoints.

Back to the drawing board then. Actually, before we ditch the 'S' word entirely it has something of immense value to offer us and this emerged in the mid 90's with the idea of the triple bottom line in business. This was environmental sustainability, social sustainability and economic sustainability. Sustainability is a three-legged stool is the metaphor, and it needs all three legs to stand up. Yes to environment and society, but what if we can't afford it? How can we pursue goals that fail to endure economically? Somewhere in this lies the key to understanding the permaculture ethics, especially the much maligned third ethic of *Fair-Share*.

Full disclosure, I studied economics, not in its pure theory but within the context of sustainable development (yes that tricky 'S' word again). I studied economics and ecology at the same time and I have always understood that permaculture lies at the intersection of these two disciplines. Economics is about how we meet needs from available resources, ecology is about how we access those resources within a broader understanding of the mechanisms of the living biosphere of which we are all a part. So balancing the needs of people and those of the planet is the origin of the first two

One School One Planet

ethics. I think everyone gets that, some might go further and say screw people, the planet comes first, but that is a hard sell in today's consumer paradise. I think most people are with us on the People and Planet aspiration, but the key question as ever is how do we achieve this finely balanced mix.

This is where the third ethic comes into play, and I strongly believe it is the key one - you can take the first two ethics as read. But I really want to drill down into what this tricky third one is all about.

Yes, it is about economics, it is about choices, it is about priorities and the 'Fair-share' epithet doesn't quite do it for me. It is a handy mnemonic for sure, but it fails to convey meaning and sounds dangerously like a naïve socialist doctrine, leaving us once again with the challenge of who gets to decide what is fair exactly?

Bill Mollison never explained it that way anyway, *fair-share* was a late arrival, an upstart if you will, one that could have come from a branding agency. The real meat on this bone is about setting limits to consumption, yes my friends at the heart of permaculture is the most radical idea of all, that there is such a thing as *enough*. In a world where consumerism is touted as an end in itself and conspicuous consumption is worn on the sleeve, one might be forgiven for forgetting the 'setting limits to consumption' bit. I guess this equates to *fair-share*, but still it goes so much deeper.

David Holmgren can help us here, I refer you to principles three and four of his set of twelve. Principle four being about setting limits and three is about meeting needs, obtaining a yield - 'You can't work on an empty stomach.' It is not in any way selfish to meet one's own needs, in fact it is essential. Without breakfast you are no good to anyone, and can't do a full day's work. Anyone who has been on an airplane knows that in the safety demo they always tell you 'in the unlikely event of the cabin de-pressurizing an oxygen mask will descend, take care to put yours on first before

One School One Planet

assisting others.' There you have it, you might be a great altruist with only your fellow passengers' concerns at heart, but at the moment you go blue in the face and pass out you are no good to anyone, in fact you are now a burden to those around you. Meeting one's own needs first is the first rule of survival for all. It is not selfish, it is self empowering.

So with these ethics I would also argue we have actually put them the wrong way round, from a permaculture perspective the process of empowerment and enabling positive change begins with meetings one's own needs, while ensuring there is still a surplus for investment. This reinvestment of surplus turns out to be the key, but is the most likely to be overlooked. The reinvestment of surplus is the *how*, it is the mechanism that empowers us to achieve the people and planet aspirations set out in permaculture's ethical model.

The rule is you meet your own needs, settling limits and realising that there is such a thing as a enough. Only you know what is enough for yourself, and this can and should be constantly re-evaluated. Where we set the line for cappuccinos or shoes is a personal choice, and no one should be telling us as individuals what to do. However, we do need to know that if we go into deficit meeting our supposed needs we will never have the faintest chance of being sustainable or doing permaculture effectively.

Sustainability is the meeting of core needs while retaining a surplus for reinvestment back in the system. What we do with surplus is what defines us. I argue in my public speaking and teaching that what you choose to do with that bit left over after survival is the key decision each and everyone of us makes. Reinvestment of surplus in social and ecological ends guarantees a world of constant improvement, an expansion of possibilities, sticking it away in the Cayman Islands for some possible rainy day

One School One Planet

is the thing that drains the life blood of any system and constantly impoverishes it.

We were chatting about this on Facebook recently and someone asked ‘what if there is no surplus’? Then, of course, the preconditions for sustainability in this case are not being met and changes have to be made. This rule holds true for all. If there is no surplus then changes must be made and a redesign is in order.

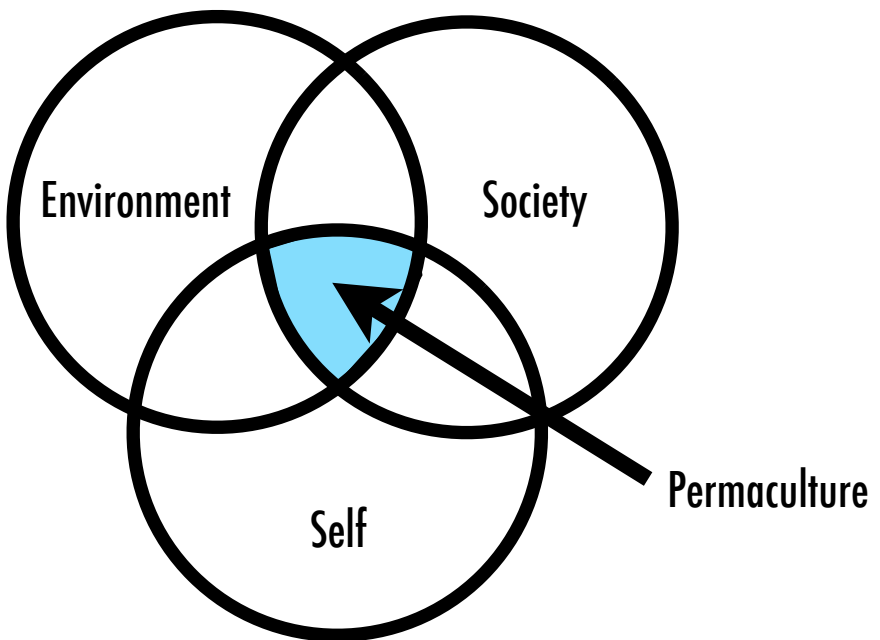
I am an enthusiastic advocate of co-operatives. They are vastly superior to a PLC, and I will tell you why. PLC’s are owned by shareholders who appoint directors to maximise the return on investment. Profits are siphoned out of the company to channel towards personal ends, tax havens and other consumerist endeavours. Co-operatives exist to benefit their customers, users and members, and any surplus is used to reward loyalty and is reinvested in the co-operative so that it can continue to benefit its stakeholders. Co-ops reinvest surplus, PLCs extract it and put it elsewhere.

This is the key difference and this is why to my mind Bill Mollison is absolutely right to state that the ethics are to set limits to consumption and reinvest surplus, for the enablement and betterment of other people, society and planet, i.e. people care and the environment.

Put simply, as an example, I live in a housing co-operative. We set our rent at a level that covers our bills and responsibilities and returns a small surplus we can spend on improving the environmental performance of our home - insulation, heating etc. - and allowing us to choose socially responsible alternatives for our food, services, and so on. So I am sorry if it does not scan as well, or make a great t-shirt, but these are and will forever be the permaculture ethics. Saying *future-care*, as I have seen proposed, tells us nothing, and is already covered by the first two anyway.

One School One Planet

The third ethic gives us the mechanism by which to achieve our ambitions of not just sustainability, but of regeneration and genuinely sustainable growth; one that builds soil, stores water and nutrients and protects and enhances biodiversity, the very tools we need to sustain our own needs.



The permaculture ideal is achieved at the point at which the needs of self, society and environment are met.

7.

What is Systems Thinking?

Jack Hunter

When we think about our position in the world, especially in Western societies, we tend to think of ourselves as somehow separate and distinct from nature. We live our lives in a human-made bubble. This idea is most clearly expressed in our culture's binary distinction between *nature* and *culture*, between the *wild* and the *domesticated*. This perceived divide between 'us' and the rest of the natural world has had an enormously destructive impact on our planet. Our assumed dominance over nature has led us to plunder the Earth's natural resources, to destroy vast swathes of wilderness, and to decimate whole populations of plant and animal species - all because of our own self-imposed distance from the natural world, and our self-elected dominance over it.

All of this can be understood as resulting from a form of *reductionism* - the notion that we can better understand and control the world by breaking it down into individual component parts. For example, forests become 'trees,' which then become 'wood,' which we can use for our own purposes. When we enter into a reductionist mode of approaching nature we ignore fundamental connections between these component parts. By breaking nature up into commodities, we destroy a complex whole. In our desire for oil (as a component-commodity of the natural world), for example, we have tended to ignore the negative impacts of extraction processes on other components of the natural world. Think, for instance, of

One School One Planet

the destruction of precious habitats for the extraction of oil from tar sands in Canada, where focussing on just one part of the whole (oil) has led to the collapse of other interrelated parts (woodland habitats, animal species, plant species, and so on).

We can express this situation in a simple formula:

$$\textit{Nature/Culture Divide} + \textit{Reductionism} = \textit{Ecocide}.$$

Systems thinking is one method by which we might be able to overcome our culture's dominant destructive attitude to the natural world. Although there were precursors to systems thinking throughout human intellectual history, we can trace its current popular formulation to the writings of the physicist Fritjof Capra, perhaps most famous for his synthesis of quantum mechanics and mysticism in the book *The Tao of Physics* (1975). Drawing on his background in quantum mechanics and theoretical physics, Capra came to the conclusion that reductionism fails as a mode of interpreting the natural world, which, contrary to the old Newtonian view of physics, does not consist of mutually distinct 'objects' (e.g. atoms as simple balls of matter), but actually is much more accurately described in terms of *systems of relationships, processes* and *networks of interrelated, and interdependent, parts*.

"Living systems are organised in such a way that they form multi-leveled structures, each level consisting of subsystems which are wholes in regard to their parts, and parts with respect to the larger wholes. Thus molecules combine to form cells. The cells form tissues and organs, which themselves form larger systems" (Capra, 1985, p 27).

"The new vision of reality we have been talking about is based on an awareness of the essential interrelatedness and

One School One Planet

interdependence of all phenomena - physical, biological, psychological, social and cultural. It transcends current disciplinary boundaries and will be pursued within new institutions” (Capra, 1985, p 285).

Key to this new vision of reality is the concept of the *system*, very simply defined as set of things working together as parts of a complex whole. The idea of systems derives from observation of the natural world, and indeed from ourselves - human beings are complex systems too!

Perhaps the clearest example of the kind of system Capra is talking about is the *ecosystem*. Broadly defined, an ecosystem is a *community* of interacting organisms (plants, animals, etc.), in conjunction with the nonliving components of their environment (air, water, soil, minerals, etc.), interacting as a system.

If one element of the system is damaged, removed or destroyed, all of the other interrelated parts will fail too. This is precisely what has led to the current crisis facing our global ecosystem today. The underlying philosophy of the industrial revolution was one of mechanism, reductionism and human dominance over nature. Natural resources were seen as independent commodities, the extraction of which had no consequences for the rest of the environment, so we had no qualms with mining coal, chopping down ancient woodlands and replacing them with factories and refineries. The value of natural resources was solely in their usefulness to human beings. Similarly, human beings were viewed as separate from the environment, above it almost, so that the pollutive byproducts of our industrial activities were somehow thought to have no direct impact on surrounding plants, animals, or even other human beings. This we now know to be entirely false, and yet incredibly we continue to perpetuate an outmoded worldview - as though we are separate from our

One School One Planet

ecosystems and our actions have no consequences. The adoption of a systems view and a re-awakening of our intimate inter-connection with the natural world, might assist us in realising the error of our ways and point us in new directions for change.

References

Capra, F. (1975). *The Tao of Physics*. Colorado: Shambhala Publications.

Capra, F. (1985). *The Turning Point: Science, Society and the Rising Culture*. London: Fontana.

Harding, S. (2009). *Animate Earth: Science, Intuition and Gaia*. Cambridge: Green Books.

8.

What is Transition?

Steven Jones

The *Transition Network* is a movement of communities coming together to re-imagine and rebuild our world. Transition is a movement that has been growing since 2005. It is about communities stepping up to address the big challenges they face by starting local. By coming together, they are able to crowd-source solutions. They seek to nurture a caring culture, one focused on supporting each other, both as groups and as wider communities.

Transition accepts the huge changes we must make to our economic, food and energy systems to avoid catastrophic climate change, and tries to put a positive spin on them. Transition anticipates the many community and ecological benefits that might come from these essential actions, and advises us to prepare for this seismic shift - it is inevitable after all.

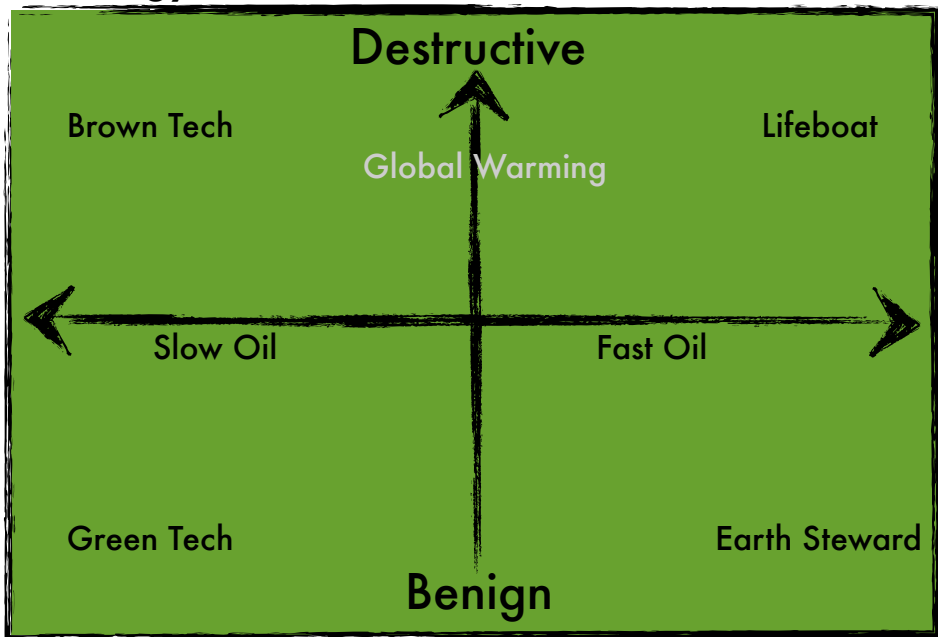
We know the world is warming, there is extensive data demonstrating the fact, but we don't know how bad or how quickly the crisis will unfold. To many around the world it is already a disaster with rising sea levels, erratic weather patterns and increasing uncertainty.

None of us has a crystal ball, but we can make informed guesses. David Holmgren came up with four scenario options in his book *Future Scenarios* and advised us to plan for all of them. Rapid global warming, the top two scenarios, point at desperate situations, either total collapse leading to lifeboats, that is only pockets of

One School One Planet

stability remaining and backs-to-the-wall survival strategies, or Brown-Tech, whereby the oil keeps flowing in an ever polluted and divided world, driving climate change and leading to ever more repressive regimes.

Energy Descent Scenarios (2020-2050)



The lower two scenarios assume slower climate disruption and a greater ability for society to adjust to the coming changes. If the energy supplies hold out long enough then we might have time to engineer a Green-Tech sustainable future, and indeed early adopters who were never too heavily invested in the carbon economy might well make this shift in time. Costa Rica, maybe. Nicaragua, Cuba, Uganda might get there as they have natural

One School One Planet

sustainable energy resources like solar, geo-thermal and hydro, and a strong local food economy. The over industrialised countries are going to find this much harder as we are so heavily invested in economic growth, petroleum driven transportation and industrial agriculture.

If energy supplies run out faster then Green-Tech becomes much harder to achieve and we are headed to a future based on Earth Stewardship, or *permaculture*. This involves making the best of what relics we have from the industrial age, and working hard to repair the damage we have done to the biosphere to offset the worst impacts of climate and ecological damage. We will need to construct a localised economy based on organic agriculture, social inclusion by the local economy, and an abandonment of globalisation all together.

This might all seem pretty bleak, but the truth is that failing to prepare in any way for the realities of our time will almost certainly lead us to the Lifeboats scenario. Indeed, pursuit of the Brown-Tech options will most likely also lead us to Lifeboats, and a future we are unprepared for. We have to lay the foundations of the Green-Tech future while we have the economic ability to achieve this. Our insurance policy, however, is to invest in permaculture and to plan for an earth stewardship future as the basic default position to underwrite our food and resource security issues.



'We're all part of the process...'
Photograph by Year 10 Photography Student at Llanfyllin High School.

9.

Shallow and Deep Ecology

Jack Hunter

The Norwegian philosopher and ecologist Arne Naess made an important distinction between two different modes of engaging the climate challenge. He called these ‘Shallow’ and ‘Deep’ Ecology. He argued that the dominant approach to the ecological crisis has been a shallow one, essentially perpetuating the current economic model, only supplementing it with ‘green’ and ‘sustainable’ technologies - electric cars, wind turbines, low energy lightbulbs, recycling of waste and so on. Of course, all such innovations are generally positive - it *is* important that we move away from fossil fuels, that we aim to consume less energy, that we reduce emissions and recycle waste wherever possible, and that our technological developments should be responsible and considerate of their environmental impacts - but they are, nevertheless, continuing to maintain the *status quo*. They are methods of sustaining our current way of life, and our cultural desire for consumable goods, luxury products and affluent lifestyles. This is shallow ecology, nothing *really* changes, everything basically stays the same. Naess explains how the Shallow Ecology Movement focusses on:

“[The] Fight against pollution and resource depletion. Central objective: the health and affluence of people in the developed countries” (Naess, 1973, p. 95)

One School One Planet

The Deep Ecology approach, by contrast, places a central importance on understanding and addressing the root causes of the ecological crisis, rather than focussing on technological, quick-fix, solutions. Deep Ecology calls for a radical shift in our cultural and philosophical perspective - after all it is our socio-economic system that is used to justify the damage we have inflicted on our global ecology, with its apparent willingness to destroy complex ecosystems for financial gain, at all costs, and our by now deeply ingrained lust for consumable goods. Deep Ecology calls for a paradigm shift, for the development of a whole new approach to living in the world. Naess summarises the Deep Ecology movement in terms of seven key points:

The Deep Ecology Movement

- 1) Rejection of the man-in-environment image in favour of the *relational, total field image*.
- 2) *Biospherical egalitarianism*.
- 3) *Principles of diversity and symbiosis*.
- 4) *Anti-class posture*.
- 5) Fight against *pollution and resource depletion*.
- 6) *Complexity, not complication*.
- 7) *Local autonomy and decentralization*.

(Naess, 1973, pp. 95-98)

Naess' vision resonates closely with that of permaculture. It emphasises a 'systems' approach to ecology, whereby the environment is seen as a complex network of interacting organisms and systems, of which human beings are an inseparable part. Our culture, and economic system, have led us to a position of perceived alienation from ecology (human vs. nature), and towards the notion that the environment is there to be *used by and for* human beings, at

One School One Planet

the expense of all else. Naess argues that we need to re-engage with our ecology, to realise that we are a part of it, equal to all other parts. Just as we find in permaculture, Naess argues that we should celebrate diversity (diversity of people, species, perspectives), and understand that natural systems are symbiotic, consisting of co-existing elements performing multiple mutually beneficial functions. In essence, Naess emphasises the importance of realising complexity, and the limitations of a reductionist worldview.

Central to Naess' notion of Deep Ecology is his emphasis on local autonomy and decentralization. Just as we see the emergence of niche ecosystems in nature, so we should also expect to see niche cultures (or philosophies) of place. Ecosystems are perfectly suited to the constraints, limitations and advantages of their local environmental conditions, they are uniquely developed so that no two ecosystems will ever be 100% identical. Why, then, should we expect human cultures to be the same wherever we go, or the same agricultural methods to apply to every environment or climate? Naess' sums this idea up with his notion of an *ecosophy*, a local philosophy of place - a way of being that emerges through respectful observation and interaction with the local environment. What works in one ecosystem does not necessarily work in another. A mode of living in a woodland ecosystem will be different to a mode of living that emerges from a mountain ecosystem, or a coastal ecosystem, for example. This is the essence of permaculture - how we can live symbiotically (in a mutually beneficial relationship), with our own ecosystems through observation and interaction.

Naess' Deep Ecology, therefore, encourages us to re-connect with our local environment and its ecology, wherever we live - in towns and cities, the countryside or the wilderness. To develop a whole new way of living (or perhaps even go back to a much older way of living), a whole new culture/philosophy that is sensitive,

One School One Planet

respectful and above all *aware* of its impacts and interactions with the rest of the local and global ecosystem.

References

Naess, A. (1973). 'The Shallow and the Deep, Long Range Ecology Movement. A Summary.' *Inquiry*, Vol. 16, pp. 95-100.



Steve with Year 10 Welsh Baccalaureate Students at Llanfyllin High School.

10.

Developing a Permaculture Curriculum for Schools

Steven Jones & Jack Hunter

The Pope's recent encyclical frames the looming issues of climate change as one of ethics and morality, placing us all in a position of responsibility and challenging us to action. His statement follows on the heels of both the scientific and political heavyweights in a call to action the scale of which has never been seen before. The proposal for the development of a permaculture curriculum suitable for use in mainstream schools aims to connect this urgent need for thoughtful and constructive change at a global level to meaningful action at a local, educational, level.

Permaculture is a design process that brings about change. Addressing climate change will require long-term political, economic and social changes. To achieve an 80% reduction in carbon emissions (as required by the Paris Climate Agreement), will require a fundamental philosophical and behavioural shift.

Teaching permaculture within a school or educational body will initiate changes within the school, which we hope will resonate out to the wider community, and further afield. Sector39 have been working closely with Llanfyllin High school over the last few years. We have a well established relationship with the School due to previous work done on their land-based studies GCSE as well as with the wider local community of the area, through the community orchard project we run there. Sector39 have already written and delivered a trial unit on 'energy and climate' for

One School One Planet

Llanfyllin High School Sixth form, which was well received, and they have expressed interest in developing their school as a 'Sustainable School' through permaculture design.

The *One School One Planet* project aims to form a Mid-Wales Permaculture Academy, a strong regional network of permaculture teachers and practitioners, founded upon twenty years of groundwork. Drawing on this network, the aim is to develop a permaculture curriculum that is accessible to educational bodies in a way that would create a mechanism to create and drive a culture change, proportionate to the challenges presented by climate change.

Project Aims

1. Bring Permaculture Education into the Mainstream; create 'Sustainable Leader Schools' reaching learning objectives while also becoming sustainable. We will work with the school on an applied Permaculture Design Course or 'PDC,' helping all - teachers, students and wider community - to develop an understanding of climate change and transforming the educational body's behaviour; to reduce waste, create productive systems, reduce carbon footprints and change the behaviour of students.
2. Affect policy and initiate a wider social change. Demonstrate to policy makers and councils the huge potentials in changing the ethos of an educational body through sustainability. Changing young minds will affect policy as those young minds become our future generation.
3. Establish a Permaculture Design Academy. Support and encourage other practitioners and pioneers to build a coherent

One School One Planet

network linking established permaculture projects, farms and co-operatives with teachers and educators in the formal sector.

One School One Planet aims to influence policy, curriculum content and subject delivery at all levels from school to adult learning. The project hopes to see an increase in educational bodies across the UK offering more sustainability courses and environmental subjects with links to business studies and economics. By working with key partners we will demonstrate and develop learning processes that bring permaculture design tools and skills into every sphere.

Framing business skills and processes around the realities of climate change would accelerate a shift in sustainability practices in all areas of the economy, which will better align business and investor behaviour with environmental sustainability and the long-term public interest.

Through working with its partners in farming, teaching, growing and communities across the UK (as well as further afield), the teaching network can demonstrate real examples of how sustainable practices work and how each person can apply them.

Furthermore a permaculture course results in a practical design project as part of the final assessment and many of these projects are subsequently implemented. This means that running these courses builds the infrastructure and examples required to run more of them by creating case study examples and related infrastructure. For example a school may implement strategies to reduce its carbon footprint, may begin growing food, composting human waste, fund new projects through capturing solar or wind energy. These design projects will be financially viable and sustainable, and will act as a template for other educational bodies. These projects can be incorporated into all subjects taught by the school and improved on year after year, making the school or college more economical as time goes on.

One School One Planet

Funding such changes within a school is not without cost, but over the longer term will result in more sustainable and economic schools, reducing their financial outlays each year. This would increase the potential of each school, and lead to a more ecologically responsible future.

One of the main outputs of our project will be the creation of a cross-curricular programme that draws on the principles of Permaculture to promote ecoliteracy, climate awareness and to foster a new attitude toward our responsibilities as global citizens. To this end we are writing 12 core units covering each of the 12 key principles. It will essentially be a Permaculture textbook catered for use in Secondary Education contexts.

This is an ongoing project, which is being reflexively written as we work with students at Llanfyllin High School, incorporating their ideas and insights into the programme as we write it. When finished, the programme will be central to the replication of this project in other schools in Wales, and further afield.

11.

PSE and the Llanfyllin Transition Project

Jack Hunter

There are numerous points of contact between the aims and objectives of the *One School One Planet* project and the Welsh Assembly's *PSE Framework 2008* (which will be revised for 2018). PSE, or 'Personal and Social Education,' is a basic subject that must be taught to all pupils aged 7 to 19-years in Welsh schools. There is no prescribed curriculum for the teaching of PSE in schools. Instead, teachers are encouraged to develop their own curricula based on the guidelines laid out in the *PSE Framework 2008*. While this has the potential to be a blessing, opening up exciting possibilities for delivering cutting-edge content and for experimenting with novel approaches to teaching and learning, in actual fact in the majority of cases PSE lessons miss the mark, and are often viewed as 'doss' lessons by pupils. We would like to see this changed.

PSE lessons should enable pupils to develop essential skills that are applicable right across the National Curriculum, and in all areas of social and personal life. These include thinking skills (planning, developing and reflecting), communication skills (oracy, reading, writing and wider communication), developing ICT skills (finding, creating and presenting information and ideas), and developing numeracy skills (using mathematical information, calculating, interpreting and presenting findings). All of this is to be achieved through the study of several key themes throughout the

One School One Planet

taught PSE programme. The key themes outlined in the *PSE Framework 2008* include:

- Active citizenship
- Health and emotional well-being
- Moral and spiritual development
- Preparing for lifelong learning
- Sustainable development and global citizenship.

Although the *One School One Planet* project has definite overlaps with several of these key areas, it is clearly most directly related to the theme of ‘Sustainable development and global citizenship’:

“Learners need to develop the skills, knowledge, attitudes and values to participate in individual and collective decision-making, both locally and globally, that will improve the quality of life now without damaging the planet for the future. They need to be helped to understand the global forces which shape their lives and to acquire the ability to challenge injustice and inequality that will equip them to promote a more equitable and sustainable world.

Education for sustainable development and global citizenship involves learning about the links between society, economy and the environment and between our Education for sustainable development and global citizenship involves learning about the links between society, economy and the environment and between our own lives and those of people throughout the world; about the needs and rights of both present and future generations; about the relationships between power, resources and human rights; and about the

One School One Planet

local and global implications of human activities and the actions that individuals and organisations can take in response to local and global issues. Concepts such as energy use, climate change, loss of biodiversity and the impact of global poverty are brought to life, understood, acted upon and evidenced through actions by learners, whilst at school or college and through their lives in the wider community” (*PSE Framework 2008*, p. 14).

Further to this, the PSE Framework encourages several other general (though no less important) aims for the teaching of PSE in schools, many of which also intersect with the goals of the *One School One Planet* project:

- To empower learners to participate in their schools and communities as active responsible citizens locally, nationally and globally.
- To foster positive attitudes and behaviour towards the principles of sustainable development and global citizenship.
- In PSE, learners are encouraged to engage in a wide range of personal and social issues that require decision-making and action through planning, personal responses, developing understanding, and reflecting upon outcomes for themselves and others.
- An emphasis on Wales, the nature of communities and the development of knowledge and skills to equip learners to participate in decision-making in communities locally, nationally and globally

(*PSE Framework 2008*, pp. 4-13)

One School One Planet

With these aims in mind, we would be very interested in helping to develop taught lessons, activities and resources for PSE sessions that would further the goals of the *One School One Planet* project (to encourage students to engage with the problem of climate change on a local level, to become involved in the decision making processes of the school and wider community in relation to energy consumption, sustainable development, transport, local economy, and so on), while also meeting the requirements of the *PSE Framework 2008* (key skills and core themes), and alleviating some of the pressure on teachers to produce their own learning programmes in PSE.

References

PSE Framework 2008. Available Online at: <http://learning.gov.wales/docs/learningwales/publications/130425-personal-and-social-education-framework-en.pdf>

12.

Creative Arts and Transition

Jack Hunter

There are numerous ways in which the creative arts can be used to explore, and disseminate information about, climate change. Art can provide a means to think through the problems that face us and our local environment in new and creative ways. Artwork can be used to examine the impact of climate change at local and global levels, in both environmental and human terms. It can be used to spread information about climate change, to enable people to make better informed decisions about their actions and their consequences. Art can help us to see the problems and challenges that face us in a new light, and can help to inspire creative solutions on a scale that other forms of media often fail to achieve.

A good example of Creative Art's role in disseminating information about climate change, as well as inspiring direct action, is ARTCOP21, which took place in 2015 ahead of the UN's Paris Climate Conference. Here is an excerpt from their website:

“Climate change is often seen through a policy or scientific lens, and solutions are discussed only in political offices, boardrooms and negotiating halls. ArtCop21 launched ahead of the UN climate talks in Paris, aims to challenge those tropes. Climate is culture. What is required is the active engagement of citizens worldwide in the urgency, value and opportunities of a transition away from fossil fuels

One School One Planet

and the embracing of a greener, sustainable future economy” (<http://www.artcop21.com/about/>).

This was achieved through an extensive programme of over 550 events across the globe, from installations, exhibitions and conferences, to performances, talks and workshops. See also the work of Cape Farewell (<http://www.capefarewell.com/>).

Possible Photography Project Ideas

With this positive vision of the role of the Creative Arts in tackling the challenges of climate change in mind, we would like to offer the opportunity for students of GCSE photography at Llanfyllin High School to engage in our own local project to enhance public awareness of these important issues. The following are a few suggestions for possible photography projects:

- As part of our project we are planning to conduct a survey of Llanfyllin High School to assess those areas of the campus that would need improvements and developments in order for them to be carbon neutral. A photographic survey of the campus, highlighting those areas that could be developed, would therefore be extremely useful. Are there areas that are currently wasted, but that could be turned into productive gardens? Are there areas of the campus that are clearly having a negative impact on the environment?
- We will be in need of promotional materials to advertise our project and its aims. Students could work on producing posters and flyers to disseminate to the local community explaining the project and encouraging people to get

One School One Planet

involved in a creative way. Artworks could explore the impacts of Climate Change, as well as encouraging sustainable solutions.

- We have been conducting micro Vox Pop interviews with members of the community asking three simple questions:

- 1) What does climate change mean to you?
- 2) What do you know about the Paris Climate Agreement?
- 3) If you were Prime Minister, what would you do to tackle the problem of Climate Change?

We would be particularly interested in rolling this Vox Pop project out into the school to gauge the thoughts and opinions of pupils.

We are also open to any suggestions for other ways in which we could use photography and the arts to explore these issues. Any other ideas would be most welcome and greatly appreciated.



Year 10 Photography Students Observing and Interacting with Nature.

13.

Working With Photography Students

In March 2017, we took 16 Year 10 Photography students from Llanfyllin High School down to the Wetlands and Cae Bodfach Community Orchard in Llanfyllin. The purpose of the visit was to allow students the opportunity to get up close to nature and to think about our role and responsibility to help encourage biodiversity in our local ecosystems. As part of a planned demonstration to celebrate Earth Day on 22nd April, students have been asked to produce banners and placards expressing the need for our communities to face up to the challenge of climate change, using images and ideas collected on the field-trip. Their images are displayed throughout this book.

Louise Bass, Photography Teacher, Llanfyllin High School

My year 10 Photography class have been working with the *One School One Planet* project to produce banners and images for a booklet (this book). Very kindly, Jack Hunter came in to introduce the project and to help fuel ideas about Permaculture. Students spent time discussing environmental issues and ways of encouraging cultural changes to work with nature and help support green practice and ways of working.

One School One Planet

Students also benefitted from a visit from a past textile student who is now studying at University. Marianne Terrill spoke about her project using digital images of green foliage inspired by environmental issues. Her sketchbook showed the digital manipulation of images to produce beautiful printed fabric designs - bringing the outside inside on soft-furnishings.

On a damp Thursday morning Mr. Hunter and Steve Jones kindly agreed to show the students around the Wetlands and Community Orchard in Llanfyllin. Here students had the opportunity to photograph the environment in detail. Steve spoke very inspirationally about using nature to heal the damage we have done. The space is a beautiful location providing fun for all the community and a real environmental mini-ecosystem. My favourite comment was that there is no such thing as waste in nature, only another resource!

In lessons, students will be using their new found knowledge to combine with images captured on the field trip to produce real banners, posters and images for a booklet. I look forward to seeing what they produce!

14.

Re-Animating the Landscape: Three Legends of Llanrhaeadr

Jack Hunter

We are living in a time of great change. Our understanding of the landscape around us, and our place within it, has transformed considerably since the times when the folktales retold in this chapter were common knowledge. No longer do we explain the features of the land around us as resulting from the activities of giants, dragons or other supernatural beings. Our understanding is, instead, most likely to be informed by developments in Geology and Physics, and this is good, but it is not the only way we can engage with our surroundings. As our scientific knowledge about physical processes in nature has expanded, so our mythological and legendary understanding of the landscape has gradually disappeared.

There is something to be said, however, for preserving our local folk stories and origin myths. For one thing, such stories give access to the worldview of our ancestors, allowing us to gain an appreciation of how they perceived the environment around them, how they believed the features of the landscape came to be, and how they understood the role of human beings within it all. Through looking at these stories we can begin to appreciate how the world in which our ancestors lived was not one of mindless physical processes, but rather was a world filled with strange powers, mysterious creatures and weird intelligences, all of which influenced and affected everyday life and understanding. For

One School One Planet

example, what we might today recognise as a Bronze Age standing stone was, to our medieval ancestors, explained with recourse to a story about dragons in the distant past. Similarly, the enormous and enigmatic boulders strewn across the valley floor by Pistyll Rhaeadr were not the result of prehistoric glacial movements, or freeze-thaw action, but were deposited there by Giants in a time before time.

We can see here how these stories seek to explain the things we see around us in the landscape, in much the same way as scientific theories do, only using mythological, rather than scientific, language and concepts. The causes described in traditional origin myths are frequently intentional, deliberately carried out by conscious supernatural beings with a definite purpose, while scientific theories posit unconscious, random and mechanical, causal processes. In a sense, therefore, folktales such as these may be thought of as early stages in the history of the development of scientific thinking, as much as our modern scientific worldview seeks to distance itself from them.

We have a duty to preserve and retell these stories not just for their historical and cultural value, but also to keep our landscape alive. Not only do they represent a crucial link to the past, they are also an entertaining and enlightening way of interacting with the world around us, right now in the present moment. It is often tempting to dismiss such stories as irrational and redundant, already superseded by our naturalistic scientific worldview, but this does not have to be the case. These kinds of stories do not have to be thought of as competing with scientific developments, but instead could be thought of as a complement to them, as a different way of thinking about the world.

While our materialistic worldview has undoubtedly benefitted our species, it has also resulted in the squandering of natural resources, the loss of countless wild plant and animal species, and the destruction of ancient and beautiful habitats. Folk stories such

One School One Planet

as these, however, remind and encourage us to treat the landscape with respect, to look upon it in awe and wonder, and to think deeply about the creatures and objects that co-inhabit it with us. The landscape, according to this older understanding, is not just passive, there to be moulded and shaped to human whims, but is in fact alive. It is something we can form a relationship with. These stories suggest that the countryside is animated and occupied by powers and personalities all its own (dragons, Giants, spirits, magical stones and so on), which demand to be treated with care and respect.

What is also especially interesting is that these ideas are not just the product of this particular locality. Similar kinds of stories can be found throughout the Welsh countryside, all across Britain, into Europe, and indeed throughout all continents and cultures. In a sense, therefore, by engaging with the traditional stories that animate our local environment, we are participating in a much wider network of interconnecting narratives that link human beings to the landscape in which they live, as well as to the distant past, through reliving the myths of our ancestors, and into the future through passing on these stories to our descendants.

The Giant's Apronful

There once lived in these parts three enormous giants by the name of Berwyn (after whom the Berwyn mountains are named), and his two brothers Myvyr and Rhuddwyn. One night Berwyn decided to surprise his brothers by building a bridge across the valley, near to Pistyll Rhaeadr, over which he would walk to greet them at daybreak. Eager to get the bridge finished before daybreak, so that his brothers would be both surprised and impressed by the effort he had put into his scheme, Berwyn set out to gather boulders to begin

One School One Planet

his work. So long did it take for Berwyn to find the boulders that, by the time he had reached the place where his bridge was to be built, a cockerel was heard announcing the start of the new day. Shocked that time had flown by so quickly, Berwyn dropped the enormous rocks he had collected all across the valley floor, and, so that his brothers did not know it was him, ran back to his home to hide, leaving the boulders behind. These same boulders still lie strewn across the valley floor today, nearby to the majestic waterfall, their gigantic size a testament to the titanic proportions of the giant Berwyn and his brothers, Myvyr and Rhuddwyn.

Y Wiber Adeiniog

Long, long ago, when strange things still haunted the wild countryside, the farmers around the village of Llanrhaeadr-ym-Mochnant were suffering under the tyranny of a local dragon, the Wiber Adeiniog (The Winged Viper). Every morning, the farmers would come to their fields to find that the numbers of their flocks had dwindled, sometimes a single lamb would be missing, other times many more had disappeared. The winged serpent was said to have occupied two lairs, both still bearing the name Nant-y-Wiber today.

One of the serpent's hiding holes was in Penygarnedd, well known as a favourite nesting place for dragons, and the other lay within the Parish boundaries of Llansilin, just over the hills. Fearful that the Wiber would decimate the local community's supply of meat and wool, the villagers of Llanrhaeadr-ym-Mochnant decided that something had to be done about it. To this end, an enormous standing stone was erected directly between the serpent's two nesting sites.

One School One Planet

The village blacksmith was told to make hundreds of heavy iron spikes, which were to be stuck all over the standing stone, and then, knowing that the colour red greatly enraged dragons, a huge red sheet was thrown over the top of the whole construction. The villagers waited in hiding for the dragon to make its usual flight from Penygarnedd to Llansilin, and when it finally did they saw the winged serpent swoop down to attack the huge red stone, insulted by its bright colours, only to impale itself on the iron spikes hidden beneath the sheet, as it coiled and thrashed itself around the stone. The villagers came out from their hiding places and rejoiced that the dragon was finally slain, thankful that they had saved their flocks from death by the serpent's claws. The great stone that had slain the dragon can still be seen today, just outside the village of Llanrhaeadr-ym-Mochnant, and is known as 'Post Goch,' (The Red Post), or 'Post Y Wiber,' (The Viper's Post).

Careg-y-Big

In the 1600s, so it has been told, there was a tall, pointed, stone pillar in the village of Llanrhaeadr-ym-Mochnant known as Careg-y-Big (The Bickering Stone). Every Sunday the people of the village would challenge each other to climb to the top of the stone and shout out 'Captain Careg-y-Big,' if they reached the top. This was seen as a public demonstration of the villagers' physical prowess and skill. Unfortunately these competitions frequently turned violent, with skirmishes breaking out around the base of the pillar, and young men fighting for the honour of being labelled 'Captain Careg-y-Big.' Indeed, it was not uncommon on a Monday morning for people to ask how many had been

One School One Planet

killed in Llanrhaeadr-ym-Mochnant on Sunday, trying to reach the coveted pinnacle of Careg-y-Big. Noticing that there was something unusual about the stone's unpleasant influence on the villagers, the Parish Priest of Llanrhaeadr-ym-Mochnant, the Reverend Parry, employed the services of a farmer from the nearby village of Penybont Llanerchemrys to get rid of the stone and its malevolent influence. It is said that the farmer used a team of large Oxen to remove the stone from the village, while the villagers were asleep so as not to ignite their covetous rage, hauling it across the countryside to his farm in Penybont. As soon as the farmer arrived at his home with the stone, however, he noticed something strange - a weird, unpleasant atmosphere lay over the whole place. The farmer was horrified to see his farm animals beginning to act oddly, sizing each other up, barking and growling. Before long a hideous scene played out on the farmer's land: his animals were viciously attacking one another, fighting, killing and goring, struggling to get closer to the cursed stone. Finally, aware that some evil and malevolent spirit occupied the stone, the farmer dragged it to a nearby pool in the River Tanat, deep enough to swallow it completely, and cast it into the cold watery depths. From that day onwards the village of Llanrhaeadr-ym-Mochnant was free from the malicious influence of Careg-y-Big, but it is rumoured that the farmer who released the village from its curse later drowned in that same deep pool, enticed into the cold waters by the stone's malicious promise of power, dominance and prestige. A tall standing stone in the village still bears the name Careg-y-Big in memory of the original stone.

One School One Planet

You may be wondering what all of this folklore has to do with the aims of the *One School One Planet* project. My suggestion is that through encouraging young people (I am thinking here predominantly of Primary School pupils), to engage with the folklore of their local environment we can engender a new sense of wonder, curiosity and respect for the natural world. Through this we might begin to foster what the philosopher Arne Naess called an *ecosophy*, a local, ecologically rooted philosophy.

“By an ecosophy I mean a philosophy of ecological harmony or equilibrium. A philosophy as a kind of sofia (or) wisdom, is openly normative, it contains both norms, rules, postulates, value priority announcements and hypotheses concerning the state of affairs in our universe. Wisdom is policy wisdom, prescription, not only scientific description and prediction. The details of an ecosophy will show many variations due to significant differences concerning not only the ‘facts’ of pollution, resources, population, etc. but also value priorities” (Arne Naess, in Drengson and Inoue, 1995: 8).

Young people can be encouraged to develop their own creative landscape narratives, their own philosophical and explanatory frameworks for engaging with the environment as a sentient being deserving of our care and respect. The ecologist Stephan Harding, arguing in favour of a return to an animistic world view and an holistic approach to science, writes:

“We must oppose the tendency of conventional science to de-personalise the world and hence to control it. We must oppose the desire to scrape away all subjectivity and to make us feel that science is value neutral - for if the world

One School One Planet

truly feels, then we cannot look at the world as outsiders - we are related to it and embedded in it, and the ethical dimension is there with us right from the start. This way of speaking recognises that for our sensing, feeling and intuition the whole of nature is a vast encompassing *being...a* complex, interconnected *system*.” (Harding, 2009: 43-44).

A re-engagement with the animistic stories of our local folklore traditions, especially amongst the young, may help to counter the de-personalisation of the natural world that has led to the current ecological crisis. Perhaps, then, what we need is not so much a *new* ecosophy, but a return to an older one - one that emerged from the land over hundreds, if not thousands, of years.

To conclude this short chapter, I will turn to the anthropologist Eduardo Viveiros de Castro, who makes a similar point that the ecological crisis faced by humanity is the result of a Western ontology that has severed human beings from their ecological web:

“I am convinced that in the somber decades to come, the end of the world ‘*as we know it*’ is a distinct possibility...when this time comes (it has already come in my opinion) we will have a lot to learn from people whose world has already ended a long time ago - think of the Amerindians whose world ended five centuries ago, their population having dropped to something like 5% of the pre-Columbian one in 150 years, the Amerindians who nonetheless, have managed to abide, and learned to live in a world which is no longer their world ‘as they knew it.’ We soon will all be Amerindians. Let’s see what they can teach us about matters apocalyptic” (Viveiros de Castro, 2014).

One School One Planet

We might also learn something taking seriously the ways in which our ancestors understood and lived in their/our local environment.

References

Drengson, A.R. & Inoue, Y. (1995). *The Deep Ecology Movement: An Introductory Anthology*. Berkeley: North Atlantic Books.

Hancock, T.W. (1873) 'Llanrhaiadr-yn-Mochnant: Its Parochial History and Antiquities.' *Collections Historical and Archaeological Relating to Montgomeryshire*, Vol. VI, pp. 319-326.

Harding, S. (2009). *Animate Earth: Science, Intuition and Gaia*. Cambridge: Green Books.

Montgomeryshire Collections, Vol. IX, p. 237.

Viveiros de Castro, E. (2014). 'Who is Afraid of the Ontological Wolf?'

OUR HOME TOO



‘Our Home Too.’

Photograph by Year 10 Photography Student at Llanfyllin High School.

15.

Animism and the Personhood of Ecosystems

Jack Hunter

If we are to take heed of Eduardo Viveiros de Castro's suggestion that we might be able to learn something about ecological sustainability from the life-ways of our ancestors, as well as from the cultures of indigenous peoples around the world, we are inevitably going to bump up against *animist worldviews*. The term *animism* derives from the Latin root word *anima*, meaning soul, and in its scholarly usage refers to the belief that the world is populated by 'spirits,' or, to use a more recent term, 'other-than-human persons.' For an animist the world is alive, so that rocks, trees, animals, plants, mountains and rivers could all possess personal attributes, desires, fears and needs, just like human beings. From an animist perspective, ecosystems are communities of beings in dialogue, and we are participants too.

Animism was first popularised as a scholarly category by the anthropologist Edward Burnett Tylor (1832-1917), who saw the belief in spiritual beings as the very earliest expression of religious thought. Indeed, for Tylor there was little distinction between traditional indigenous religions and the major world religions – he considered that all religions, from tribal religions to Catholic Christianity, could in their essence simply be defined as the 'belief in spiritual beings.' Tylor's version of anthropology, however, was closely wedded to a form of social evolutionism known as Developmentalism, that was particularly popular during the latter

One School One Planet

half of the nineteenth century (Stocking Jr, 1982, p. 97-100). According to this view, European (and especially British) culture was understood to be the pinnacle of social and cultural development, while other non-western and indigenous cultures were seen as somewhat backward, irrational and misguided, but that nevertheless had somehow survived into the modern day. Sadly, such a view ultimately distorted Tylor's perception of the animistic worldview(s) he wrote about in his books, and it wasn't until much later that scholars began to re-engage with animism without such a developmentalist (maybe even colonialist) attitude.

In his 1960 publication 'Ojibwa Ontology, Behavior and World View,' the American anthropologist Alfred Irving Hallowell (1892-1974) described how for the Ojibwa people of central Canada the world is populated by persons 'not all of whom are human.' Hallowell famously gives the example of his conversation with an old Ojibwa man:

"I once asked an old man: Are all the stones we see about us here alive? He reflected a long while and then replied, 'No! But some are'" (Hallowell, 1960)

The old man's answer to Hallowell's question had a lasting impact on the anthropologist. The old man's response suggests that for the Ojibwa people, stones have the capacity for life – their worldview leaves open the possibility that stones, trees, mountains and so on can be persons, and as such ought to be granted the same respect as a human person, just in case. Interactions with features of the landscape, therefore, must be understood as interactions between persons, as *relationships*.

More recently, scholar of religions Graham Harvey has taken up the themes of Tylor and Hallowell's work (amongst others), with the formulation of his 'New Animism.' New animism differs from

One School One Planet

Tylor's 'old' animism firstly through not assuming a social developmentalist perspective that sees animistic beliefs as symptoms of primitive and irrational thinking, and secondly by shifting its focus away from the somewhat problematic notion of 'spirits,' towards the much more encompassing idea of 'persons,' which may include persons who are 'other-than-human.' Harvey writes:

“Animists are people who recognise that the world is full of persons, only some of whom are human, and that life is always lived in relationship with others. Animism is lived out in various ways that are all about learning to act respectfully (carefully and constructively) towards and among other persons. Persons are beings, rather than objects, who are animated and social towards others (even if they are not always sociable). Animism...is more accurately understood as being concerned with learning how to be a good person in respectful relationships with other persons” (Harvey, 2005, p. xi).

The underlying relational philosophy of the new animism (which is only 'new' to academia), represents the antithesis of the materialistic-industrial-consumer philosophy that has dominated Euro-American attitudes to the environment for the last 200 years, and would seem to offer a route towards the kind of 'Deep Ecology' advocated by Arne Naess.

Many in our post-industrial society are likely to feel uncomfortable with the notion of attributing personhood to the various components of our ecosystems, but we can take a hint from the Ojibwa and treat ecology *as if* it possesses personhood, without necessarily *believing* that it does. If we were to adopt a relational attitude, and interact with rivers, streams, trees, animals, soils and so on as if they are persons, our *behaviours* and *actions* would also

One School One Planet

necessarily be altered as a consequence. We wouldn't want to pump sewage into another person, for example, or destroy the home of person, or abuse, misuse or exploit another person. When we think in relationships, we realise that we need to develop good relationships with the other persons in our ecosystem – prosperous, mutually beneficial relationships. Much as in systems thinking, a relational worldview makes us aware of our own interconnected and interdependent relationship with the world around us. So, even if we don't *believe* that the tree in our garden is a person, or the river in our village, or the sky above our heads, we can still *behave* as if they are – our actions can be informed by a relational ecocentric perspective, rather than a purely anthropocentric one.

Granting Personhood Status to Ecosystems

An interesting recent development is the gradual granting of personhood status to key ecosystems by some of the world's governments. For example, the Whanganui River in New Zealand, known as Te Awa Tupā amongst the indigenous Maori people, was the first river to be granted the legal status of personhood. The Maori people, whose lives are dependent on the river system, and who have always thought of the river as an ancestor, have been fighting for the last 140 years for the river to be treated with the respect that it deserves as an ancestor and living entity, a request that was finally granted on Wednesday 15th March 2017. Gerard Albert, the lead negotiator on behalf of the Whanganui tribe explains:

“We can trace our genealogy to the origins of the universe, and therefore rather than us being masters of the natural world, we are part of it. We want to live like that as our

One School One Planet

starting point. And that is not an anti-development, or anti-economic use of the river but to begin with the view that it is a living being, and then consider its future from that central belief.”

What this means for the Whanganui River is that, as a legal person, any damage inflicted on it is equivalent to damaging a human being. What if we could do this for our own rivers, forests and mountains? What impact would it have on our relationship with our local ecosystem? Might it help us to achieve the goals laid out by the Paris Climate Agreement? Would it encourage us to behave more responsibly? To change our use of chemical fertilisers, for example, which may leach into the river from farmlands? I think it would.

Within days of the New Zealand government’s decision to grant personhood status to the Whanganui River, a court in Northern India ordered that the sacred River Ganges, and its primary tributary the Yamuna, also be granted the legal status of personhood, as well as glaciers and other ecosystems, precisely so that they can be protected and preserved for the benefit of future generations, and for our global system as whole.

Briefly turning to the theme of our local folklore, we might be surprised to find that many of our most familiar landscape features have already had their personhood recognised by our ancestors. Bala Lake, just over the Berwyn mountains, for example, is inhabited by the great monster Tegid, and the River Severn was known by the Romans as the goddess Sabrina. What about Afon Rhacadr, Afon Tanat and Afon Cain? Are these persons too? If so, have we been treating them with the respect they deserve? Could animist principles be a catalyst for the change in thinking required by the Paris Climate Agreement? Perhaps we should consider lobbying to have our rivers recognised as persons, and our

One School One Planet

ecosystems as complex communities of these ‘other-than-human persons,’ just as the Whanganui tribe have been doing for the last 140 years.

References

Hallowell, A.I. (1960). ‘Ojibwa Ontology, Behavior and World View.’ In G. Harvey (ed) (2002) *Readings in Indigenous Religions*. London: Continuum. pp. 17-50.

Harvey, G. (2005). *Animism: Respecting the Living World*. London: Hurst & Company.

Stocking, G.W. (1982). *Race, Culture, and Evolution: Essays in the History of Anthropology*. Chicago: University of Chicago Press.

Tylor, E. B. (1930). *Anthropology: An Introduction to the Study of Man and Civilization*. London: C.A. Watts and Co. Ltd.

Viveiros de Castro, E. (2014). ‘Who is Afraid of the Ontological Wolf?’

<https://www.theguardian.com/world/2017/mar/16/new-zealand-river-granted-same-legal-rights-as-human-being>

<https://www.theguardian.com/world/2017/mar/21/ganges-and-yamuna-rivers-granted-same-legal-rights-as-human-beings>

16.

Going Green

Steven Jones

Many people have been attracted to living in Wales by the promise of a greener, less fraught and less materialistic lifestyle. Even if they haven't thought through the whole sustainability challenge, instinct draws people away from the intensity of urban life towards something a little gentler, and potentially more rewarding.

I have to confess I was one of those people. I was born just over the Welsh border in Shropshire but as I like to say, I came here the long way round - via Montreal, Reading, Chandigarh, Nairobi and Chimanimani in Zimbabwe, before I ended up back in Reading in 1993. Somewhere along the line I had decided that I wanted to live a different kind of life, closer to nature and less complicated but also by then I had discovered *permaculture design*, something that had really taken off in Zimbabwe since Bill Mollison had delivered the first African permaculture design course in Botswana back in the 1980s. Permaculture is about designing from nature, understanding that the natural world is the template for sustainable systems, and understanding how deeply unsustainable most modern practices are.

Coming to Wales for me was more by accident than design, a happy co-incidence shall we say. When I was living in Zimbabwe in the late 80s and early 90s I met a series of people who led me firstly to the opportunity to be care-taker of a permaculture designed farm, and then the chance of applying what we had learned on the

One School One Planet

first farm to the neighbouring property, which had sat derelict for 10 years or more. It's a long story and I will spare the details, but we opened it up as a traveller's lodge, in a place that received few visitors, but somehow it worked and it still thrives today 25 years later. Heaven Lodge, Chimanamani it is called.

In my time there I kept two cows and grazed them on the land and made cheese from the milk. Local villagers keen to be involved set up their own self-help job schemes and before long the house was stocked with fresh bread and vegetables, and we were offering full meals that contained many self grown ingredients to our visitors. The formula worked and the lodge became successful, one of our early visitors was a young outward bound instructor from Shrewsbury whose first job after school had been at the *Challenge Outdoor* centre, based at Llanfyllin Workhouse in mid-Wales.

This was my first link to the dispersed mid-Wales community of creative, independent people who worked in emerging areas like alternative technology, permaculture, renewable energy, co-operatives and all sorts of new and interesting areas I had never before seen as realistic options. I remember saying to myself that I would give Wales six months - what did I have to lose? I moved to near Machynlleth in 1994 and have never looked back since. Wales instantly became my home. I recognised the possibilities and potentials of living here and set about realising my own dreams. I consider it an honour and a privilege to live in this amazing country, but that does not mean I don't have my criticisms.

Much of Wales, although it looks so beautiful and natural, is actually nothing of the sort, it is in a state of *plagioclimax*. It is a landscape laid bare by industrial farming. Heavy sheep stocking levels and the use of nitrate fertilizers to improve pastures has led to much of the natural diversity disappearing. Wetlands and bogs have been drained, forests cleared, soils exposed to give way to a green

One School One Planet

baize of pasture ideal for fattening stock but at the expense of just about every other living thing.

Don't believe me? Well look no further than mid-Wales' own famous naturalist Iolo Williams. When he spoke at the Senedd in Cardiff in 2013 on the launch of the *State of Nature* report, his anger was palpable, pointing the finger at the bureaucrats and legislators who have allowed the decimation of the natural world in Wales to happen almost unabated.

What I have to come to recognise is that we all need to question almost every aspect of our lifestyles and habits and find new and different ways of behaving that benefit both ourselves, our communities and the natural world. The third part is the big one, as much of what the western economies have done is to sacrifice the natural world to extract minerals, fossil fuels and to clear the forest for intensive farming. This short-term wealth has come at a great cost and it is now clear that if we carry on this path then only war, eco-collapse and worse await around the corner. This is our chance to learn and make this transition to another way of behaving.

Chickenshack co-operative was created in 1995 as a permaculture community to explore how we might live together differently and to have a different relationship to the land and resources. Bigger, older properties can be shared, greatly reducing costs, allowing tenants to invest these savings into insulation, renewable energy, planting productive trees, taking care of the land and restoring damaged ecosystems, and this is precisely what we did. What was once primarily bare, sheep nibbled grass has given way to a diverse, richer and more mixed landscape. The land holds more water, is more productive and varied in its outputs, it is teeming with birds and wildlife in a way it demonstrably wasn't 10 years previously and is far more attractive a place to live in. Just imagine the positive impact we could have on the global ecosystem

One School One Planet

if millions of people started to apply these same ideas to their own homes and lives.

Permaculture design has the potential to steer human ideas of development in different and new directions, the possibilities of this reality are what motivates me to get out of bed every day!

Going Green

In 2009, when I first moved to the Llanfyllin area I became involved in a project to renovate and save the old workhouse in Llanfyllin, the very same one my traveller's lodge visitor friend had told me about back in Zimbabwe in 1991. One of the many projects I did there involved making a 6 part TV series for BBC Wales called '*Changing Lives, Going Green.*'

I saw it as a chance to share some of the insight and inspiration I had gained from my own personal experiences and I started conversations with the production company to try to steer their ideas of what being green was all about towards a more permaculture informed viewpoint. In the end they offered me a part in the show as the host and guide for the chosen family's green journey.

Filming, whilst trading off the needs of the TV people, our guests and our own ideas and convictions, was a lot of hard work and ridiculously long hours, but we were proud with the resulting series. We had to fight hard not to allow the TV people to trivialize what for us were really serious and important issues and to a large part we just about managed to keep it on the right side of serious, while also being genuinely funny and fun at the same time. All credit to the family we worked with, they were such great sports.

All of this leads me back to *One School One Planet* project and my continuing mission to open up debate and challenge people to see

One School One Planet

new possibilities where they might otherwise see problems and limitations.

I now live in Llanrhaeadr-ym-Mochnant, at Dragons Co-operative, the fourth co-operative I have helped found, and I am still working hard for permaculture, community and sustainability.



Dragons Co-Operative and Craft Shop, Llanrhacadr-ym-Mochnant.

17.

Dragons Co-op: Housing Co-operative and Gift Shop

Walking down Market Street in Llanrhaeadr-ym-Mochnant, passers-by might be forgiven for thinking that Dragons gift and crafts is a typical, if slightly quirky, store front catering to weekend tourists. Yet, as soon as one steps through the front door, they can immediately see that gifts and crafts are but the first touch-point of a diverse and integrated effort to put permaculture principles into practice.

Dragons sells fair-trade and eco-products, Ugandan coffee and gluten-free snacks, and hosts a variety of skills workshops, and it is the public face of Dragons Housing Cooperative: a local community of activists accelerating permaculture practice in their hometown and throughout the UK.

Steve Jones, the principle at Dragons, is a farmer's son from Shropshire, and has always been fascinated by the relationship between people, land and the environment. With a degree in Sustainable Development and a PGCE in Business Studies & Economics, Steve sees how permaculture design can make a real impact to communities and stimulate self-sufficient thinking.

“Learning about permaculture was almost a natural progression for me, and I travelled to Zimbabwe to launch my first permaculture project” says Steve. “Kudzishandira is a self-help business start-up and micro-credit scheme,

One School One Planet

supporting villagers to establish enterprises offering services to the local community.”

On returning to the UK, Steve spent two years researching co-operatives and permaculture on a greater scale. Through the Centre for Alternative Technology, he met the people who enabled him to establish the permaculture community he envisioned whilst still in Zimbabwe.

When the opportunity to buy Dragons, a former high street gallery and arts shop, opened up, it was a perfect chance to start a brand new project in Mid-Wales. On the recommendation of Radical Routes, a network of housing co-operatives based in Leeds, Steve approached Triodos Bank for funding.

“Most banks will just look at the financials of a project without really attempting to understand the vision,” says Matt Boggan, relationship manager at Triodos. “But vision is one of the first things we look at, and Dragons was an opportunity to support environmental sustainability and the local economy at the same time. Our depositors want to know that their money is being put to good use and want their bank to actively choose to support environmental initiatives. Partnering with projects like Dragons is a great way to ensure that the money people save with Triodos is working harder to create a more sustainable society.”

Retaining the name and colourful storefront sign, the location is now the home of Dragons Worker Co-operative, which brings together artisans and consultants generating their own livelihood through collaboration, and Dragons Housing Co-operative that has three affordable housing units. It is also the base for Steve’s permaculture design course, which is delivered by his organisation

One School One Planet

Sector39. Through the courses, Sector39 accelerates permaculture practice, shares knowledge and experience and builds alliances with like-minded groups.

“Permaculture starts with you, uncovering your own motivations, values and ethics and learning how to express them in a clear and concise way. Before we can fix the natural world we have to understand our place within it and empower ourselves to make deliberate and positive changes.”

For Steve, that includes how we personally use our money and what sectors banks invest in.

“The study of natural wisdom and the application of those insights to our own communities is the only route we have to take us to a restored and resilient biosphere – and it’s making a difference to people’s lives and communities,” says Steve. “With this mind-set, we can make use of money to build affordable, energy efficient housing, farming techniques that restore soil carbon and enhance biodiversity, and clean energy systems that become increasingly cheap with continued investment from banks like Triodos.”



Steve and Dewi Morris with GCSE Land Based Studies students, planting trees at Cae Bodfach Community Orchard in Llanyllin.

18.

Cae Bodfach Community Orchard

Strong communities need shared assets and ideas to bring them together. This was the idea behind the Cae Bodfach Community Orchard. The land has been generously donated by Bodfach Hall to be managed by Llanfyllin Council for the wider benefit of the community.

We first submitted design ideas to the Council in 2010/11 and have been working down there periodically ever since. We have won support from Keep Wales Tidy, Cwm Harry's Get-Growing project and now the Welsh Cider and Perry Association, supported by volunteers from the community, Llanfyllin High School and Primary School, who have all lent a hand. Over the ensuing weeks helpers from a team doing community reparations work also focussed their attentions on the wetland area, thinning out the reeds and mosses and providing some ideal mulch materials to support the trees in the orchard. This is the key to ecological thinking - no waste! The outputs from one system are the inputs for another.

We are planting heritage varieties of apple, plum and pear in what will become a community orchard and forest garden in a space where anyone will be welcome to harvest the fruit and enjoy the herbs and pollination plants we have also introduced. We have also added blackcurrant, raspberry and chokeberry and flowering currant, to support pollinating insects and to provide snacks for walkers. Support species include dog rose, hazel, elder and blackthorn as well as under-plantings of mint, strawberry and lemon balm.

One School One Planet

This is an open ended project, we hope to be adding to it for many years, and in doing so we aim to create something of lasting value and beauty for everyone to enjoy.

Llanfyllin High School students from the land based studies GCSE group have been our most regular volunteers and they have designed plant guilds for the garden as part of their GCSE studies.

19.

Vox Pop Project

As part of the *One School One Planet* project we undertook an audit of opinion in the town specifically relating to climate change. One way of achieving this was to conduct short one-to-one 'vox pop' interviews with residents of the town in order to gauge their opinions on these important issues. We filmed the interviews with the aim of editing them together into short internet videos to help engage the local community in thinking about climate change and its impact on all of our lives.

The interview process was very simple, focussing on just three easy questions, which we asked from the comfort of a beautiful Gypsy caravan, parked up in Llanfyllin Market Square.

- 1) What does climate change mean to you?**
- 2) What do you know about the Paris Climate Agreement?**
- 3) If you were Prime Minister, what would you do to tackle the problem of Climate Change?**

The ultimate aim of the audit was to make it possible to look back after our project has finished to see how much impact we have had in changing peoples' minds about climate change and what they can do on a local level to help mitigate its effects. In order to give an idea of some of the varied responses we received, we have transcribed a selection of the interviews.

One School One Planet

Transcripts

1. What does climate change mean to you?

“Oh, it’s a disaster. It’s disaster in the making.”

“Scary.”

“We don’t have as nice summers as we used to.”

“I think about getting out on my bike more. That’s the first thing that comes to my mind.”

“My first thoughts? Oh dear, basically. I would struggle to sum it up more precisely than that.”

“I don’t know. Fear, really, a little bit. That’s the first word in my head! I was trying to think of another one that was a bit more pleasant, but no.”

“Scary, scary is my main one. Disappointment that there is a lack of things being done on a global basis, but it’s encouraging what’s going on at a more sort of grassroots level, but more needs to be done, full-stop really.”

2. What do you know about the Paris Climate Agreement?

“Very little, although I’m embarrassed to say that.”

“Only that whatever the government say they’ll do they won’t stick to it, because they never stick to it.”

One School One Planet

“I don’t know nothing about that, no.”

“I’m a little bit vague on it, but I know it’s an agreement that lots of countries have sort of signed into to reduce their CO₂ levels.”

“Not and awful lot. I think a few years ago when people really started talking about climate change I kept a little more in touch, but I think we’ve had so much information that, yeah, it can be a little bit difficult to keep up.”

“I wasn’t there, but I do know that a very large number of countries signed up to an agreement - an agreement, not a contract - to try to reduce CO₂ emissions, which is only part of the problem actually.

“I’m not actually fully up to date with it. It went on last year. It’s been on the news recently hasn’t it? People are slightly worried that Donald Trump may go against this, so it’s a little bit up in the air because of that. But I don’t know what the agreement actually says.”

3. If you were Prime Minister, what would you do to tackle the problem of climate change?

“Oh, electric cars, straight away, because everybody needs transport, and they all think they can’t live without it, so...”

“I’d ask why everything has to hook up to the National Grid, because we’ve got enough hydroelectric power in the valley here to power the whole village, so why can’t we just do that?”

One School One Planet

“Well, I would like to see things done a lot more locally. So, transport managed a bit more locally, local people involved in managing the services that they use.”

“There’s not much we can do about it, with all the traffic and that.”

“Well, I think that we need to be working towards carbon neutrality. I think personally that it needs to be localised, and I think that big projects on big national scales are reasonably inefficient really. It needs to be local - local energy, local produce, more local people working on transportation really.”

“We need to hugely invest in alternative energy sources, like hugely, like war-time investment you know. Or, we need to really stop using electricity - well, energy, not just electricity - it just isn’t acceptable to carry on. People should be really be trying not to use as much energy until we can create enough sustainably to be able to justifiably use as much as we are.”

“I think it’s just continue investing in green technologies. It’s tricky isn’t it, because of the way in the Western world you can see the steps that you need to take, but for the developing world it’s tricky. They need that cheap source of fuel. But I think through investing in green technology it will become cheaper and more accessible and available to everybody. It’s getting really close. I think it’s almost cheaper to use renewable energy in some situations than the fossil fuels these days, so I think, I mean yeah - just continue investing in green technologies and hopefully that should just go on.”

20.

Teaching Permaculture Principles in the Classroom

Jack Hunter

The following are extracts from reflections written up after classroom sessions with a Year 10 Welsh Baccalaureate class at Llanfyllin High School. We hope to give an honest presentation of the strengths and weaknesses of the work we did with the school in the hope that it might help others who want to replicate this project in the future.

“I live in a farmhouse in a small village in Wales...”

This week saw the first official One School One Planet classroom sessions at Llanfyllin High School. We have started working with a class of 29 Year 10 Welsh Baccalaureate students, who are helping us to trial and develop our 12 unit course and learning resources.

On Wednesday, Steve took the first class with the group. He introduced the aims of the One School One Planet project and trialled our Vox Pop project with the students, which we first initiated back in December 2016. The Vox Pop project asks three simple questions:

1. What does Climate Change mean to you?
2. What do you know about the Paris Climate Agreement?
3. If you were in charge, what would you do about Climate Change?

One School One Planet

Some of the responses from students are collected below. They are quite revealing.

What does Climate Change mean to you?

How our world is changing due to modern technology giving off greenhouse gasses that heat up our world.

I don't have an answer!

I feel it's important and want to know more.

Global warming, hurricanes and ice caps melting. No other significant thoughts. Hear about it a lot. I need to know more.

What do you know about the Paris Climate Agreement?

Haven't heard of it!

Yes, agreement to fight Climate Change. Stop fossil fuel consumption, I think.

It's a climate agreement, but I don't know what it is about.

It's something like all agreeing not to use oil. Donald Trump wanted to pull America out.

If you were in charge what would you do about Climate Change?

Nothing you can really do, it's a natural process that's going to happen.

They are banning manufacturers from selling diesel cars. They will be completely banned.

Prepare for it. Try to prevent and slow it down.

Limit production of single use items. Strictly enforce recycling.

The responses we gathered on Wednesday serve as very useful baseline survey of students' views and opinions about climate change and their awareness of strategies for dealing with it.

On Friday, Steve and Jack returned to the class to introduce some project work to begin next week. The project will see each student writing their own 3 minute speech inspired by Severn Suzuki's 1992 address at the Rio Earth Summit.

One School One Planet

In preparation for starting their speeches we asked the class to put together some ideas for things they might include. We suggested that they write three short paragraphs addressing the following points:

1. Tell us about yourself, your background...
2. What are your concerns?
3. What solutions would you propose?

We were keen to point out that what we were *really* interested in was their own personal concerns. What they *themselves* are worried about. Here are some of the ideas they came up with. Again, they are revealing of some very important issues surrounding public opinion about the need for social, cultural and economic change in addressing the eco-crisis.

"My Dad is a Lorry Driver, but apparently he won't be one in a few years because the world is "changing." Do we really want to be a part of this change if it is going to take away jobs from people and stop people from being able to provide for their families? I didn't think so!"

"My name is ---. I live in a farmhouse in a small village in Wales. My concerns are global warming and sea levels rising. When I was in China the amount of pollutants we breathed in wasn't safe to live in. Greenhouse gases are warming up our atmosphere. Animals and plants go extinct."

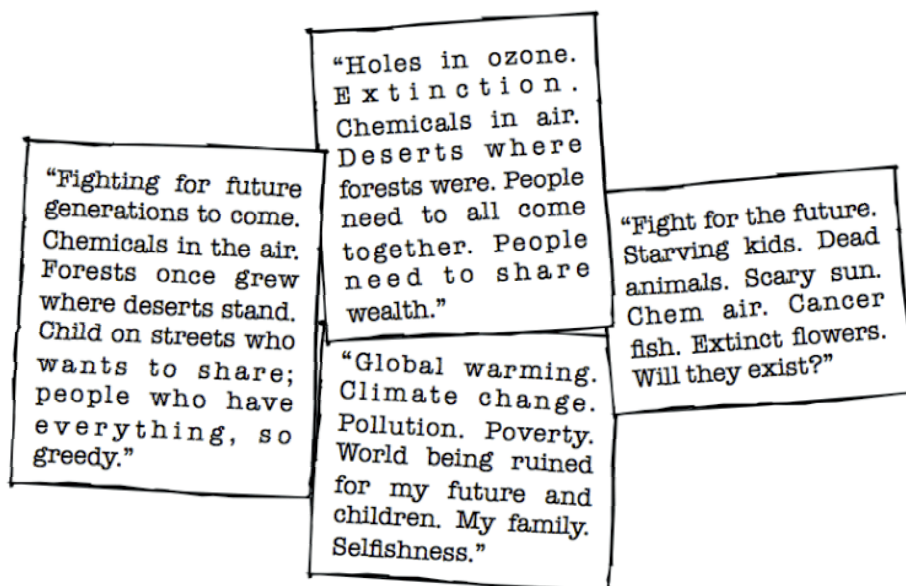
"Stop blaming farmers for everything. They aren't doing anything wrong. Plug up the volcanoes! My Dad's a farmer, but that's bad because those jobs are creating too much CO₂ and that means the world will end, so everyone will hate him as the world is 'changing.'"

"My name is --- and I'm only 15, but I can see the growing problems that are affecting our home, our planet. We call ourselves civilised but look at all the wars that are slowly destroying our planet. Look at the power stations pumping out carbon dioxide."

One School One Planet

These are all legitimate concerns and opinions that require positive solutions. We hope that over the course of our 12 units – each covering one of the 12 principles of Permaculture – we will be able to address such concerns with practical and sustainable suggestions.

Finally, one last output from these first two days of classroom work: while they were watching Severn Suzuki's speech we asked the students to make a note of any particularly poignant imagery or ideas in the address. Some of the clusters of imagery they collected read like little poems. Here are a couple of examples:



"The Earth just looked simply beautiful and awesome..."

We have been back in school working with year 10 Welsh Baccalaureate students this week. On Wednesday Steve and Jemma gave a session based around the theme of 'Observation.' Jemma created a worksheet for students to work on as the lesson

One School One Planet

progressed. First students were asked about progress on their Severn Suzuki-inspired speeches. The class will continue to develop their speeches over the coming weeks.

Next, Steve introduced the role of observation in the scientific method. He showed a short video clip of the popular science presenter Prof. Brian Cox. After watching the video, students were encouraged to write their own definition of science:

“Science does not rely on belief, like religion, it relies on experiments and evidence.”

Continuing with the theme of observation, the class then watched portions of the short film ‘The Overview Effect,’ a documentary about the experiences of Apollo astronauts on first seeing the Earth from above – from space!

The aim was for students to develop an understand the importance of observation in developing resilient responses to change of any kind. The video also helps to put humankind in a much wider context. It allows us to step back for a moment to observe how intimately connected we all are, and how much the planet depends on us, just as we depend of it. While watching the documentary, students were asked to make note of at least three of the most important quotations from the video. The following is an example of one student’s responses:

“The Earth just looked simply beautiful and awesome.”

“The Earth is fragile. It’s a single molecule and we’re in this life together. They realised humans are all the same, living and breathing air in a ‘paper-thin’ atmosphere.”

One School One Planet

“We went to space and realised we were already there.”

The final activity for the session was for students to design their own Memes communicating some of the ideas we have been discussing in class. We had some excellent designs handed in to us, here is one particularly evocative example:



The following Friday, Steve and Jack returned to do a follow up session looking in more detail at the Paris Climate Agreement and the social, cultural and technological changes that we are going to

One School One Planet

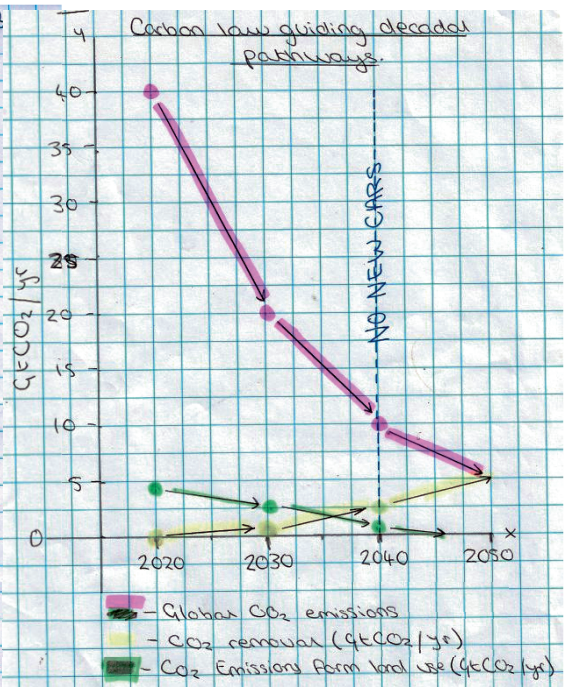
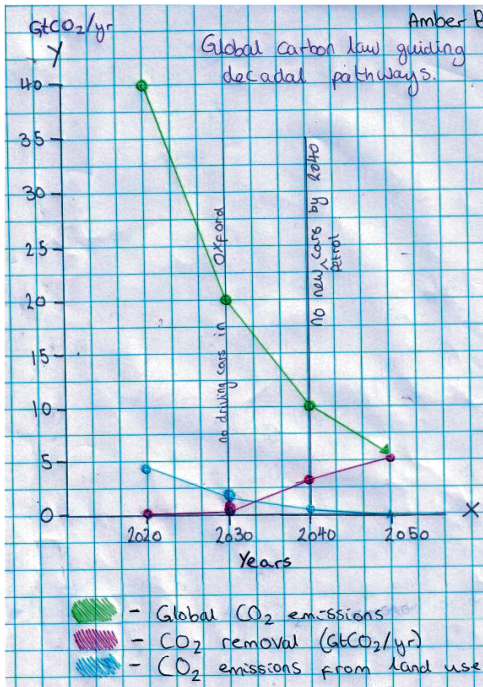
have to introduce in order to meet its goals. Students were asked to plot out the Paris Agreement graph for themselves using raw figures, and to plot some key Government policy deadlines onto the chart.

Global Carbon Law Guiding Decadal Pathways

	2020	2030	2040	2050
CO₂ Emissions	40,000	20,000	10,000	5,000
Carbon capturing technology	0	1,000	3,000	5,000
Farming	5,000	3,000	1,000	0

Figures represent Gigatonnes of Carbon Dioxide per year (GtCO₂/yr).

Here are a couple of fine examples of students' graphs:



One School One Planet

to foster an awareness among students of the significance of the agreement, and that by now every country in the World has agreed to work to its targets.

We were overall impressed by the level of critical engagement from the students. They certainly have enquiring minds, and do not take our sessions without a fair pinch of scepticism. This is good for initiating dialogue! Many students have strong opinions about climate change and proposed solutions to the problem – as we discovered last week – and it is our continuing responsibility to address these issues in a constructive manner over the coming weeks.

The students, quite rightly, have a great many questions! One method we are considering putting into practice after half term is to use a Questions Box. If students have any pressing questions arising from our sessions that they want answering or discussing they can write them on a slip of paper and put them in the box. We can then go through the questions and structure our lessons around them in the following weeks. At the end of the first two weeks, Steve reflected:

“We have done two full weeks at the school now. It has been interesting. The hardest aspect is that, unlike on a PDC, the pupils don’t choose to be there. so it is a very different relationship. Plus, for many they have not really been called to think for themselves before, so it can feel like an uphill struggle at times. The positives have been their work - the feedback we have received via their written work is really encouraging. Most are engaged, and most have deeply held views on the subject of their future, climate and environment. Hopefully we can give them the tools to help them express these ideas more clearly with better informed opinions. We realise now the need to prepare a proper

One School One Planet

scheme of work and lesson plans, to give ourselves more structure and to have something in hand to show school senior staff or Ofsted inspectors. It has certainly been interesting!”

“Soil means dirt, crops and ploughing a field...”

The theme for Week 3 was ‘Catch and Store Energy.’ The first taught session with the class aimed to explore how natural systems function – specifically in the context of soil ecosystems and trophic pyramids. To begin we introduced the theme of soil, and asked students to think about something they probably hadn’t really thought about before – ‘What is soil? What does it mean to you? What impact does it have on your wellbeing?’ The aim in asking this question was to encourage students to begin thinking about themselves in relation to soil, and to realise how much we actually depend on the soil. Here are a few of the responses we received:

“Soil is the ground/surface of the earth. It can be found almost everywhere and is in no short supply. It is one of the most common things used in farming and agriculture.”

“Soil means dirt, crops and ploughing a field.”

“Soil is literally my life because my family are farmers.”

“Mud, dirt, filth, messy, worms, earth, wet, moist...”

“My family has an allotment so we use compost for our gardening. We have fresh vegetables and fruit.”

One School One Planet

It is clear that students have an awareness of the importance of the soil for our survival, but there are also some negative associations with 'dirt' and 'filth' and misconceptions about soil that must be addressed. Soil is not, for example, 'almost anywhere and...in no short supply,' and overzealous ploughing contributes to soil degradation while also releasing carbon dioxide into the atmosphere. These are issues and associations that we will address throughout the remainder of the course. The following is a particularly detailed response to the question:

"Soil is decomposed leaves and twigs which are decomposed by worms. Soil is vital to us...we use it to grow food which allows us to eat and live and thrive. Soil helps us to grow our healthy and unhealthy food. Soil allows people to have a living and a job selling their produce. Soil can be used to hide things and protect things. It is a home for animals..."

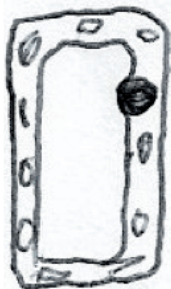
Once the connection between the soil and our food supply was established, we proceeded to delve a little deeper into the processes involved in the carbon and nutrient cycles. In the hope that students would draw on their previous learning in Biology lessons, we asked them to write a short explanation of the process of photosynthesis, and to consider why photosynthesis is important for humans as well as plants. We received a range of responses, from relatively simple to quite complex:

"Photosynthesis is how plants feed off sunlight."

"CO₂ + Water + Light = Oxygen and Glucose."

"Leaves are full of chloroplasts filled with chlorophyll. The sun's rays are absorbed in the chlorophyll to provide food for the plant."

Plant
cell



"Photosynthesis is the process that gives plants energy to live. The part of photosynthesis that is important to us is the conversion of CO_2 to O_2 ."

"Photosynthesis is when plants use the sun's energy to create glucose, which gives them energy. It's important to us so that we can eat. Without food we would be unable to live."



Carrot
using
'Photosyn-
thesis.'

The lesson concluded with a discussion of trophic pyramids and the organic and non-organic components of soil and their role in the carbon cycle.

The second session of the week took a slight divergence from the theme of 'Catch and Store Energy' with a re-cap exercise to assess learning over the past couple of weeks. We wanted to check where students were at in their knowledge and thinking about the topics we had so far discussed. The main activity for the remainder of the lesson involved students watching a video from Abraham, a farmer living and working in Kenya who recently attended a Permaculture Design Course run by Steve in Uganda. Abraham explained how his farming techniques were inspired by permaculture principles he had learned on the PDC, and he invited students in Llanfyllin to get in touch with him to ask questions. With this as their impetus, the students were then asked to write letters to Abraham, telling him about life in Wales and asking questions about his community farming activities. Abraham will be responding to the students' letters with another YouTube video. We are hoping that we will be able to build up a constructive dialogue between Abraham and students at Llanfyllin High School.

One School One Planet

“They got the Soil to come alive...”

The theme for Week 4 was ‘Obtain a Yield.’ To begin, and drawing on our emphasis on soil in the previous week, we asked the students to read through a newspaper article about a recent speech from the current UK Secretary of State for the Environment, Food and Rural Affairs, Michael Gove. We asked the students to read the article in groups, and then to tell us what the article was about.

UK is 30-40 years away from 'eradication of soil fertility', warns Gove

Farmers must be incentivised to tackle decline in biodiversity, says environment secretary at launch of parliamentary soil body

We then introduced the concept of a Yield, and asked students what they understood by the term:

A total. Total output. Something you get from something.

A yield is the amount of product you get from something.

The product of something.

A yield is something you gain from a particular event. An output from something.

Wheat. Barley. Biodiversity.

To make a link between the previous week’s sessions on soil, we then showed the class a short video about the ‘Greening the Desert’ project, co-ordinated by Permaculture teacher Geoff Lawton in Jordan.

One School One Planet

The video explains how through the implementation of simple permaculture design principles, a previously arid and barren landscape was transformed into an abundant and productive ecosystem. While watching the video we asked students to make a note of as many yields as they could. We wanted to encourage the students to consider the potential benefits of polycultural agriculture systems. Students made note of fruit trees, figs, pomegranates, citrus, dates, mushrooms, insects, oxygen, water and de-salinated soils! It was good to see that the students were beginning to think of yields as more than just food! Students were then asked to explain how the Greening the Desert project was so successful:

They used organic matter to add carbon to the soil. Water trenches captured any rain that fell within 10 acres. They used trees to shade water to reduce evaporation.

They got the soil to come alive by adding organic matter, and they planted trees.

People put back into the soil what they take from it so it keeps its fertility.

Steve then gave a short slideshow comparing monocultural and polycultural agricultural systems. Students were encouraged to think about how the strategies and techniques shown in the Greening the Desert video might be useful for tackling climate change:

One School One Planet

The soil contains more carbon so there is less in the air so there is less chance of climate change.

The way carbon is being efficiently put back into the soil.

Ways to change and improve are: plant trees and different crops together so the soil becomes more fertile. If the soil becomes fertile it has more carbon and better yields.

By adopting the methods from the video, it may help to balance and bring the atmosphere gasses to a safe state. By planting more trees with rich soils, these trees can help put carbon into the soil and an increased rate.

We concluded the lesson by looking back at answers to questions the students had written for us during Monday's session. We handed out sheets with the questions and answers written on them so that students could read through them in their own time, and possibly also share them with their parents. See below:

Climate Questions and Answers

Why do you think global warming should be stopped and do you think we can adapt?

We think global warming should be stopped because the scientific community has told us in no uncertain terms that we face a catastrophe if we don't. We are struggling to adapt to the 1 degree change we are already experiencing. Look up Puerto Rico or Houston for the effects. At 2 degrees warmer it will be much, much worse.

One School One Planet

Do you dislike farming and think this should be stopped?

Not at all! I am a farmer's son and a grower. I do recognise, however, that current industrial monocrop practices are part of the problem and we will have to investigate and develop restorative and climate friendly ways of farming. I think this innovation is exciting and I look forward to seeing it happen.

What other ways of ploughing a field instead of using machinery?

Low tillage and zero tillage methods are already well established, and there are many examples of how to do this. Using green manures, deep rooted plants to cycle nutrients are also a part of the answer, as well as smaller farms and different types of crops. A mulch covering the soil, whether organic matter or something non-biodegradable, can exclude light and kill off the plants below ready for re-sowing.

Why do scientists blame agriculture for climate change? We are the backbone of this country and don't get enough money/credit for what we do!

Agriculture worldwide is responsible for 5 Gt pa of CO₂, of the global total of 40 Gt. So it is wrong to 'blame' farmers. It really is all of us, especially in the first world, who are causing it. There is no doubt that farming practices will have to change and evolve to suit the changing reality. Globalisation has reduced food prices, and we in UK pay too little for what we eat, this is part of the reason why farmers don't get enough for their products.

One School One Planet

How will all the already made diesel/petrol cars be disposed off?

They will get used until they wear out I imagine. In big cities it will be much cheaper to use an electric taxi than to drive your own polluting petrol car. Some cities are already preparing for this as they are being fined for having bad air quality as a result of the traffic.

How much CO₂ do we produce each year?

Globally 40 billion tonnes. 5 countries are responsible for all the historic emissions, UK, USA, Japan, Germany and France. China is now the biggest emitter, but they also produce many goods like steel for US and UK which is very dirty. Total UK carbon dioxide emissions have decreased by around 29% since 1990. Transport is now the biggest source as we phase out our dirty coal power stations

What can we do to cut the amount of CO₂ we produce?

1. Switch to electricity from renewable sources.
2. Change our transport systems, and re-localise much of our economy, and learn how to produce much more food organically.
3. There are also carbon removal strategies such as re-growing forests, and exploring exciting new products like biochar.

Will Abraham get rain on his farm?

Yes, but instead of being regular and predictable by season it has become much more erratic.

One School One Planet

How will farmers afford new proposed technology?

New taxes and incentives will come online very soon. A carbon tax will penalise bad investments and help subsidise good ones.

How will me and my dad earn a living from this?

By staying ahead of the game and understanding these changes are inevitable.

What will happen to our old equipment?

Good question. Recycled, re-purposed, reinvented maybe. Much of it may remain useful but we will find ourselves using it in new and different ways

What do you think of farming and how can it be improved?

Farming has to become carbon negative as soon as possible. We can develop methods rapidly that improve soils and repair damaged landscapes. Farming has a bright and interesting future. It will be an area of innovation and new ideas.

Can the world be saved from global warming?

Yes it can, but the clock is ticking! Big changes have to be made in the coming few years. That is why we are here working with you.

Will our class have an effective impact on reducing global warming?

Yes, I really believe it can. You can be leaders! The most powerful way to bring about change is to create examples that can inspire others.

One School One Planet

The second teaching session in Week 4 continued with the theme of 'Obtain a Yield.' We started by reflecting back on the questions we had tried to answer for the students, and explained how these questions and answers could also be considered as yields. We wanted to know whether students were happy with the answers we had given. We explained how their questions, and our answers to them, would be published in the next issue of the Tanat Chronicle! We will post it when it is published.

We then watched the first 8 minutes of a Geoff Lawton video about soil dynamics. While watching the video we asked the students to make note of at least five different types of organisms living in the soil. Students noted: bacteria, fungi, protozoa, nematodes, amoebas, insects, worms...

We then asked students to reflect back to the Greening the Desert video from the previous session, and to think about what this new knowledge about the soil tells us about how the Greening the Desert project was so successful:

By digging a water ditch and letting it fill with precipitation, and the use of organic matter to enrich the soil, which encouraged the growth of more organisms and plants to shade water and prevent evaporation. So essentially establishing their own small ecosystem.

To draw the session to a close, and to make links between soil fertility, yields and agricultural practice, Steve introduced the students to biochar as an innovative means of simultaneously adding carbon and nutrients back into the soil. He explained the process of wood

One School One Planet

pyrolysis used in the manufacture of biochar, which is a form of pure carbon created by heating organic matter in a kiln. The surface area of the biochar is an idea habitat for soil organisms, which it can be inoculated with (for example by feeding it to cattle ground up and then spreading the manure on fields). Students were asked to explain the process of wood pyrolysis and why it is a useful technology:

This process heats wood and drives off gasses and other materials to create pure carbon. However, this carbon has a low density that makes it a great “home” for the microbes that are in soil.

Wood turns to charcoal by heating. If you bury the charcoal it puts carbon back into the ground and makes soil fertile.

“Everything can impact everything...”

The principle that we explored in Week 5 was ‘Systems and Limits,’ as an introduction to systems thinking and specifically the role of feedback. Natural systems function through interacting feedback loops, and there is a lot we could learn from paying attention to this fact. To begin Wednesday’s session we asked students to give us their own feedback on our sessions so far. We received some positive feedback:

“I’ve learned about how climate change applies to people in the real world and what I need to do to stop it.”

“The information given has been interesting. We should

One School One Planet

work toward applying the information we have learned to solving problems.”

“Learned a lot about the environment. Learned a lot about the community. Learned about things I didn’t know before.”

We also received some negative feedback (constructive criticism?), which we could then use to refine our teaching sessions. One of the key pieces of feedback was that the students wanted to do more practical sessions and activities. We addressed this in Friday’s session (see below).

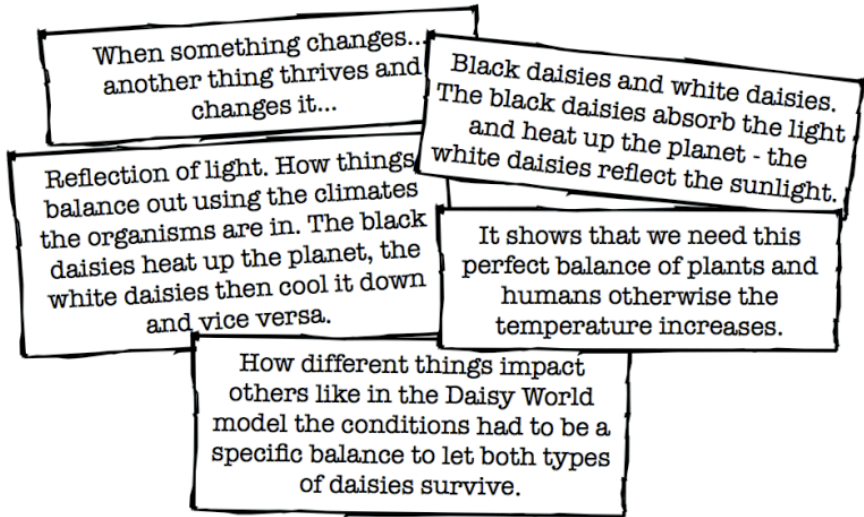
Following our feedback session from the students, Steve explained that if we are to overcome the challenges of anthropogenic climate change we will have to learn to think in a way that is totally different to the kind of thinking that gave rise to it. Our impetus for discussing a different way of thinking was Albert Einstein’s observation that ‘We cannot solve our problems with the same thinking we used when we created them.’

One such alternative way of thinking is ‘systems thinking,’ which would be the main focus of the rest of the lesson. Steve introduced students to the work of James Lovelock and his Gaia Hypothesis, as a different way of thinking about our role in and relationship to our global system. The backdrop to Steve’s explanation was a drawing by one of the students in the class from a previous session that seemed to capture quite nicely the implications of Lovelock’s message.



One School One Planet

We then showed an example of a simple feedback loop through the analogy of James Lovelock's 'Daisy World Model.' The model shows how ecosystems, climates and atmospheres function as self regulating systems with very definite limits. There is only so much room for fluctuation within the system, and after a certain point it collapses. It is through feedback interactions that these systems maintain themselves over time. After watching the video we asked students to explain in their own words what the Daisy World model tells us:



The first session concluded with a discussion of various different kinds of feedback loops, from the sugar-insulin cycle, to the ways our bodies react to high and low temperatures, to the relations between populations of foxes (predators) and rabbits (prey) in an ecosystem. As a summary of all of this thinking about systems and feedback we showed a remarkable video narrated by George

One School One Planet

Monbiot that illustrates perfectly how different systems subtly interact and influence one another in extraordinary, and often unexpected, ways.

To begin Friday's session we asked students to think back to the ideas we discussed in the previous lesson, and to some of the videos we watched, and write down their thoughts about what we stand to learn from observing how natural systems function:

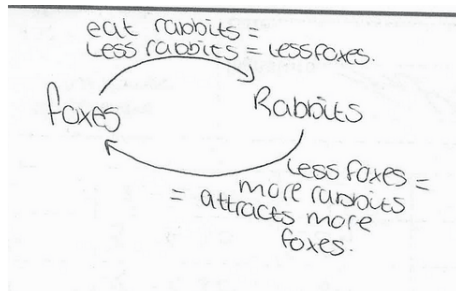
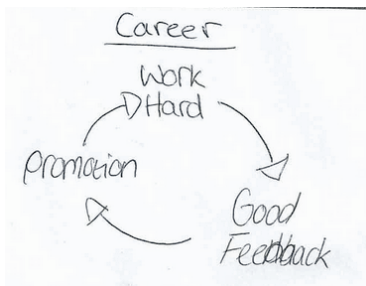
"Anything you do/put in place has a knock on effect to something else."

"We learn that every action that is made in nature can effect other systems too, e.g. wolves being removed impacted the different species and rivers."

"By adding one single element it can have a knock on effect like dominoes. It can have a massive effect on the environment and animals."

"If you take away one animal, the whole ecosystem can change. Everything has a purpose. Everything impacts everything."

Students were then asked to draw their own feedback loops. Here are a few of examples of what they came up with:



One School One Planet

We then showed a short video about Farmer Managed Natural Regeneration (referring back to concerns raised in previous sessions about the role of agriculture in tackling climate change). The video shows how through observing how natural systems function, and attempting to work with and emulate those systems, agriculture can be of benefit to the natural world – enhancing biodiversity while also benefitting human communities. This is the kind of different thinking Albert Einstein was talking about.

It was at this juncture that we took heed of the students' feedback from the previous session and went outside into the crisp morning air to do a few practical games and activities to further explore systems thinking. The first game asked students to arrange themselves in a line alphabetically by name without talking to one another. Using only gestures and body language, the group was able to organise itself alphabetically – an example of a self organising system in action.

The second game aimed to demonstrate how dynamic, complex and unpredictable systems can emerge from just a few relatively simple interactions. Steve gave the students instructions to follow a simple rule: that they each had to select two people from the rest of the group (without letting anyone know who they are), and to stand equidistantly between them. What at first appears to be a simple task soon becomes much more difficult as each individual moves about in the group, shifting the targets of another.

The final outdoor activity was aimed at giving the students an idea of just how much of an influence humans have had on the global climate in a relatively short amount of time. We unravelled a 50 meter long piece of string, representative of the last 500,000 years. Every meter of the string represented 10,000 years, 10 cms represented 1,000 years and every centimetre 100 years. We wanted to give a sense of scale! Homo sapiens emerge around 200,000 years ago, agriculture about 7-8,000 years ago (about 70cms from

One School One Planet

the end of the string), and the industrial revolution about 200-300 years ago (just 2-3 centimetres from the very end of the string). Since the industrial revolution humans have removed the previously intact tropical forest belt, raised atmospheric CO₂ from 285ppm to 406ppm, and used up approximately half of the reserves of coal gas and oil that had been stored below the earth's surface for some 300 million years.

When we returned to the classroom we watched another George Monbiot narrated video about the interactions between Whales in the ocean and the Earth's atmosphere, to further reinforce the idea that all of the Earth's systems exist in relationship with, and that the interactions between them have a profound influence on the planet as a whole.

The session concluded with a round-up of the last five weeks, as we move into the next phase of the project – putting some of the ideas we have discussed into practice!

21.

Reflecting on Classroom Experiences So Far

Jack Hunter

Over the course of five weeks we completed five units of our programme with a year 10 Welsh Baccalaureate class at Llanfyllin High School. This chapter is a reflection on the experience, and offers suggestions for other teachers considering approaching permaculture principles in the classroom. The first five principles included:

Unit 1: Creatively Use and Respond to Change.

Unit 2: Observation.

Unit 3: Catch and Store Energy.

Unit 4: Yields.

Unit 5: Limits and Feedback.

This was a sensible place to wrap up the first round of classroom sessions, as from Unit 6 onwards the focus increasingly shifts towards practical applications of the ideas we have been discussing so far. The introduction of Systems Thinking in Unit 5 also demonstrates how the perhaps seemingly unrelated themes of the the past few weeks are in fact intimately connected. We are now in the process of starting to think about the best way to go about moving forward to integrate theory and practice in the second year of our project.

One School One Planet

The first official classroom sessions for the One School One Planet project were back in March 2017 when Jack went into some Year 10 GCSE Photography lessons to introduce students to a project on . He introduced students to the concept of ‘ecosystems’ and to the main principles and ethics of permaculture. Jack was joined by a past student from the school, who talked with the class about developing design ideas from natural patterns.

Students were then tasked to produce memes incorporating their own photographs and text. Students developed their ideas in class, and then a couple of weeks later Jack and Steve returned to the school to take the class down to the wetlands and Cae Bodfach community orchard to take some photographs for their memes.

Overall these sessions were good, and we were happy with the outcomes. The sessions were stand-alone sessions and did not directly feed into the work we have been doing with the development of our school programme, but nevertheless the experience was illuminating and showed that we could work with secondary school students on these issues.

The next round of classroom sessions did not commence until September. In the interval between March and September we had been working on developing our programme and scheme of work, while also talking with senior management and teachers at Llanfyllin High School about how best to go about incorporating them into the school curriculum. The decision was that a top set Year 10 Welsh Baccalaureate group would be the best class to work with.

“Environmental politics needs a new psychological sensitivity, a capacity to listen with the third ear for the passion and the longing that underlie many of our culture’s seemingly thoughtless ecological habits. Those habits may be surrounded on all sides by mighty, often creditable,

One School One Planet

certainly exhilarating human motivations.”

(Theodore Roszak, *The Voice of the Earth*, 1992, p. 41)

Sessions with the group were occasionally very challenging in a number of different ways. One key challenge was attempting to overcome the view that environmentalists and climate scientists are blaming farmers for the eco-crisis. Many of the students in the class are from farming families and were understandably defensive about their livelihood. The following extract from a student response, demonstrates this sentiment clearly:

“Stop blaming farmers for everything. They aren’t doing anything wrong. Plug up the volcanoes! My Dad’s a farmer, but that’s bad because those jobs are creating too much CO₂ and that means the world will end, so everyone will hate him as the world is “changing.”

These are, of course, understandable and legitimate concerns. Livelihoods are vitally important, and we are 100% in agreeance about this. Nevertheless, this instinctive reaction automatically shuts down dialogue. In spite of our best efforts to explain that we are not playing a ‘blame game,’ many students refused to engage seriously with the material we presented because of these gut responses. The question is, therefore, how can we overcome these blockages to engage in constructive dialogue?

We worked with the students over five weeks to overcome this idea, and actually to press the point that agriculture is vital for the future, and that farmers are in a unique position to be leaders in climate change mitigation. One approach we have considered using is to emphasise that farming really is the future. Steve even goes so far as to suggest that farmers will be the rock stars of the future!

One School One Planet

Farming will play a vital role in tackling climate change and developing a sustainable relationship with our local and global ecosystems. Farmers will become something like biodiversity wardens, or ecosystem stewards. Farmers will be the front-line interface between humankind and the natural world, ensuring a harmonious and balanced relationship with our ecology. Farmers will also become key drivers of carbon sequestration, making use of farming techniques that trap and store carbon. I think we were successful to a certain extent in addressing some of these issues, but there is still a lot of work to be done in encouraging a different way of thinking.

In spite of a few challenges and set-backs, we were overall very impressed by the level of intellectual engagement with the materials were presented, and have been very happy with the quality of some of the work we have received over the last few weeks.

We learned a lot over the first five weeks in the classroom. We have had to adapt our approach considerably from what we had initially expected. I think that originally we wanted to bring something of the more open-ended discursive approach of the Permaculture Design Course to the classroom, but in the end found that it didn't quite work. That is not to say that it couldn't, just that we perhaps didn't quite pull it off. What we found was that the students in the class we were working with required a fairly rigid structure to their lessons, and plenty of activities, in order to keep them engaged and on task. This resulted in a great deal of planning for each taught session, and a proliferation of different worksheets to scaffold our sessions.

Now that this initial groundwork has been done we look forward to moving on to the more practical elements of the course in the New Year. The second aspect of Permaculture is about the implementation of ideas from systems thinking and observation of the natural world for practical purposes. We are currently thinking

One School One Planet

of different ways of allowing students at Llanfyllin to begin to implement these ideas. One possibility is to engage students in a project at Cae Bodfach community orchard that has received funding to plant a medicinal herb garden, another possibility is to carry out a survey on Llanfyllin High School itself to identify areas of the campus that could be put to ecological use.



Jack discussing Climate Change with Year 10 Students, Llanfyllin High School.



‘It is up to us.’

Photograph by Year 10 Photography Student at Llanfyllin High School.

22.

How Far Can you See?

Creating a 25 year Vision for Llanfyllin, can we be carbon neutral by 2042?

Steven Jones

Rising to the climate challenge can create new opportunities and new possibilities, all it takes is *imagination* – we can be leaders not followers! Many people try not to think about the climate challenge as it is either too scary, or too contentious for them. The future will indeed be dark if we don't work together to build a vision of what we do want - inaction is no longer an option. The longer we wait to rise to this challenge the harder it will be to make the changes required of us. Indeed, the longer we wait, the more rapid the change we have to make will need to be. Science is warning us not to wait any longer, to make the changes and adaptations to the unfolding crisis - inaction only means an even more rapid and severe transition is required!

None of us has a crystal ball, but we do know that the future will be very different from now. If we use current science to make predictions, what does that tell us?

The science underpinning the Paris Climate Accord tells us that we need to achieve net zero carbon emissions as soon as possible, we should be well on our way to that target by 2042. We can be sure that the way we plan and deliver essential services like transport, food, energy and buildings will be entirely different by then. The key sources of green house gas emissions are food,

One School One Planet

energy and transport, and what many specialists in the area are predicting is that ‘the future is going to be local.’

Global actions are planned in support of the scientific community, as politicians continue to duck their responsibilities by claiming there is still doubt about the data.

More than simply finding creative solutions to food and energy issues we are told that we must develop strategies to actually *capture carbon* from the atmosphere and return it to the soils where it is no longer a problem. They call this *carbon sequestration*, and the target we have to hit by the end of this century is to drive atmospheric CO₂ down to 350ppm.

The climate has always changed, but nothing like this has been seen in the last 2 million years. Before we started burning coal and chopping down forests the level was 285ppm, and today it stands at close to 410ppm. Don’t let these numbers baffle you, it is a huge challenge and one we simply have to address if we are to have a chance of a secure future.

Paris is not enough!

195 countries signed the Paris agreement in December 2015, accepting the science and the urgent need for climate action. However, governments, including our own, have only committed to about half of what we are actually required to do. They have admitted that on their own it is too big a challenge for them to achieve and therefore the need for leadership to come from us, the people, has never been stronger.

Perhaps older people are more complacent facing up to problems they perceive won’t affect them directly, but whatever the reasons for this I strongly believe the younger generations have an amazing opportunity to rise to this challenge.

One School One Planet

Make the climate challenge the defining issue for this generation!

If we don't plan and work for the future we want, then in all likelihood we will have something ill thought through imposed on us from above at the last minute. The world is waking up to the fact that Governments and industry are too embedded in the current system to be able to make the changes required. *It is up to us to build a vision of what we want our future to look like.*

Let's create a different vision of the future!

We want Llanfyllin, the school and community, to be leaders, rather than waiting to be told we should be planning for an exciting low-carbon future. Jobs, housing, food, finance, and so many other opportunities, are going to be defined by this increasingly urgent agenda. If we can see these changes as a big opportunity then I believe people's attitudes can be quickly changed.

- Did you know there are ways to build houses that lock up carbon from the atmosphere for many decades? Using timber, straw, wool, earth and lime plasters we can build modern homes for less cost that also sequester carbon.
- Did you know there are ways to grow food and manage land that also suck down tonnes of carbon from the atmosphere and lock it up in the soils?
- Soil carbon, like compost and humus, doesn't just make land more fertile, it helps it absorb and hold onto moisture, reducing flooding and the need for irrigation.
- There are even search engines that plant trees on the revenue generated.

One School One Planet

- Did you know there are ways to produce heat and electricity that are many times more efficient than the current technologies we use?
- The price of renewable electricity is dropping fast. This will create many new opportunities for ourselves - new jobs, more interesting work, new and innovative ways of doing things that both embrace new technologies and methods, but also that are informed by tried and tested ways of being that draw on centuries of history.

Send us your vision for 2040!

We need new ideas, new stories, new inspiration to help people's understanding grow, and with the clock ticking we need to find ways of being creative and inclusive in how we do this:

- How old will you be then?
- Use your imagination to create a story or description of what Llanfyllin school and community will be like at this time.
- Can you think of ways to inspire, inform and change people's attitudes to be more respectful of climate change issues, and to be more aware of the potentials to make positive change.
- Feel free to talk about any aspect of life in our low carbon future, work, school, food, economy, entertainment, technology - it's up to you.

Write an essay, draw us pictures, record a talk or video. We are keen to hear your ideas in what ever form you would like to share them. We want to inspire people to realise that we *can* rise to this challenge, while at the same time make big contributions to

One School One Planet

Llanfyllin High School, the local community, and Wales as a whole. We believe the people of Llanfyllin can be leaders and an inspiration to the rest of the world, do you?

Useful Resources

Arwain:

<http://www.arwain.wales>

Children in Permaculture Project:

<http://www.childreninpermaculture.com>

Dragons Co-Operative:

<http://www.dragons.cymru>

Federation of City Farms & Community Gardens:

<https://www.farmgarden.org.uk>

Paramaethu Cymru:

<https://wales.permaculture.org.uk>

Permaculture Association:

<https://www.permaculture.org.uk>

Permaculture Magazine

<https://www.permaculture.co.uk/>

Powys Transition & Low Carbon Communities Network:

<http://www.powystransition.org.uk>

Sector39:

<http://www.sector39.co.uk>

Skeptical Science:

<https://skepticalscience.com>

Transition Network:

<http://transitionnetwork.org>

Biographies

Steve Jones is a passionate and articulate teacher and practitioner of permaculture design with extensive knowledge of both the theory and practice of sustainable development. More than 25 years of hands-on experience implementing and project-managing land-based initiatives, such as community gardens, small farms and sustainable housing cooperatives underpin Steve's expertise. Steve has worked as a member of the *Get-Growing* team in Newtown, Powys, which supports the development of community food growing projects, and as a consultant to the *Squash Nutrition* urban food growing project in Liverpool. Steve is a certified Business Studies and Economics teacher and has a degree in Sustainable Development from the University of Reading, which bring depth and professionalism to his teaching approach. He maintains several blogs and is an avid networker and communicator on the subjects of sustainability, transition and co-operatives. With his colleagues at *Sector39*, Steve delivers up to six on-site permaculture design certificate courses per year alongside numerous shorter courses, including on low-impact structures, introduction to permaculture and forest gardening.

Visit www.sector39.co.uk for more information.

Jack Hunter, PhD is an anthropologist exploring the borderlands of ecology, consciousness, religion and the paranormal, living in the hills of Mid-Wales. His doctoral research with the University of Bristol examined the experiences of spirit mediums and their influence on the development of self-concepts and models of

Llanfyllin Transition Project

consciousness. He is the founder and editor of *Paranthropology: Journal of Anthropological Approaches to the Paranormal* (www.paranthropology.co.uk). He is the author of *Why People Believe in Spirits, Gods and Magic* (2012) and *Engaging the Anomalous* (2018), editor of *Strange Dimension: A Paranthropology Anthology* (2015), *Damned Facts: Fortean Essays on Religion, Folklore and the Paranormal* (2016), and co-editor with Dr. David Luke of *Talking With the Spirits: Ethnographies from Between the Worlds* (2014). He is a lecturer in Sociology and Psychology at North Shropshire College, and teaches modules on Education, Criminology and Abnormal Psychology. He completed his Permaculture Design Course at Chester Cathedral in 2017. He is particularly interested in exploring the possibility of an alternative way of engaging with and understanding the landscape and environment, informed by his anthropological research and interests, in particular through explorations of animism, folklore, systems thinking and deep ecology.

Visit www.jack-hunter.webstarts.com for more information.

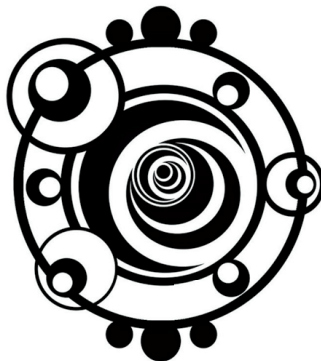
One School One Planet

Vol. 1

Climate. Education. Innovation.



Steven Jones & Jack Hunter, PhD



Psychoid Books

